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Martha Vartouhi Samourian Bedrosian
University of Massachusetts Amherst

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PRE-ALLIED HEALTH CURRICULUM:
A MODEL PROGRAM FOR USE IN COMPREHENSIVE
URBAN SECONDARY SCHOOLS

A Dissertation Presented

By

Martha Vartouhi Samourian Bedrosian

Submitted to the Graduate School of the
University of Massachusetts in partial fulfillment
of the requirements for the degree of

DOCTOR OF EDUCATION

February 1987

School of Education

PRE-ALLIED HEALTH CURRICULUM:
A MODEL PROGRAM FOR USE IN COMPREHENSIVE
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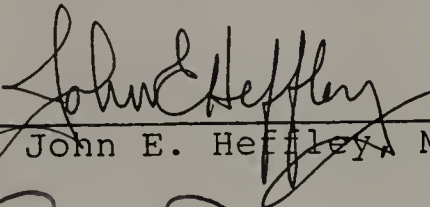
By

Martha Vartouhi Samourian Bedrosian

Approved as to style and content by:



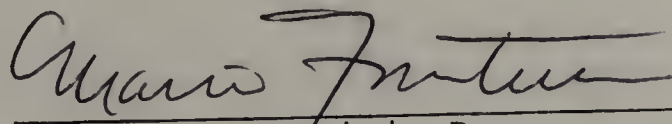
Dr. Kenneth A. Parker, Chairperson of Committee



Dr. John E. Heffley, Member



Dr. Myron R. Segelman, Member



Dr. Mario Fantini, Dean
School of Education

Martha Vartouhi Samourian Bedrosian



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This dissertation is dedicated to my mother, Queenie, to the memory of my father, Bagdasar, and to my husband Kenneth. I can honestly say that without the continued support, encouragement, endless hours of help and love from my husband, this doctorate would never have been actualized.

Therefore, I hereby name Kenneth Gegham Bedrosian co-recipient for the degree of Doctor of Education and that he may share in this honor with me.

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TABLE OF CONTENTS

ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	vii
ABSTRACT	xi
CHAPTER I	
Introduction	1
Statement of the Problem	1
Purpose of the Study	2
Importance of the Study	3
Definition of Terms	7
Scope and Delimitations of the Study	8
CHAPTER II	
Historical Background and Review of Literature	10
Legislation	36
CHAPTER III	
Methodology	41
Selection of Subjects	46
Data Processing and Analysis	47
Limitations	47
CHAPTER IV	
Review of Research Data	49
Analysis	50

CHAPTER V	
Rationale and Conceptual Focus of the Curriculum	92
Program Objectives	97
Pre and Post-Testing	108
CHAPTER VI	
Conclusion and Recommendations	110
ENDNOTES	115
BIBLIOGRAPHY	120
APPENDIX A	124
APPENDIX B	127
APPENDIX C	143

LIST OF TABLES

TABLE 1	Ethnic Background	51
TABLE 2	Grade	52
TABLE 3	Percent of Students in Grade Ten Through Twelve	52
TABLE 4	House/Programs	53
TABLE 5	Percent of Students in Academic Percentile Groups	54
TABLE 6	Number of Science Courses Completed by Respondents	55
TABLE 7	Educational Goals	56
TABLE 8	Interest in Pre-allied Health	57
TABLE 9	Interest in a Pre-allied Health Program (Total Respondents)	58
TABLE 10	Interest in Elective Courses for Pre-allied Health (Total Respondents)	59
TABLE 11	Interest in Learning Specific Secretarial Skills (Total Respondents)	60
TABLE 12	Interest in Work Study for Pre- allied Health (Total Respondents)	61
TABLE 13	Interest in a Pre-allied Health Program (Minority Male Respondents)	62
TABLE 14	Comparative for Interest in a Pre-allied Health Program (Minority Male Respondents Versus Total Respondents)	63
TABLE 15	Interest in Elective Courses for Pre-allied for Pre-allied Health (Minority Male Respondents)	63

TABLE 16	Comparatives for Interest in Elective Courses for Pre-allied Health (Minority Male Respondents Versus Total Respondents)	64
TABLE 17	Interest in Learning Specific Secretarial Skills (Minority Male Respondents)	65
TABLE 18	Comparative for Interest in Learning Specific Secretarial Skills (Minority Males Respondents Versus Total Responses)	66
TABLE 19	Interest in Work Study for Pre-allied Health (Minority Male Respondents)	66
TABLE 20	Interest in Work Study for Pre-allied Health (Minority Male Respondents Versus Total Respondents)	67
TABLE 21	Intereest in a Pre-allied Health Program (Minority Female Respondents)	68
TABLE 22	Interest in a Pre-allied health Program (Minority Respondents Versus Total Responses)	68
TABLE 23	Interest in Elective Courses for Pre-allied Health (Minority Female Respondents)	69
TABLE 24	Interest in Elective Courses for Pre-allied Health (Minority Respondents Versus Total Responses)	70
TABLE 25	Interest in Learning Specific Secretarial Skills (Minority Female Respondents)	71
TABLE 26	Comparative for Interest in Learning Specific Secretarial Skills (Minority Respondents Versus Total Respondents)	72
TABLE 27	Interest in Work Study for Pre-allied Health (Minority Female Resondents)	72
TABLE 28	Comparative for Interest in Work Study (Minority Respondents Versus Total Respondents)	73

TABLE 29	Interest in a Pre-allied Health Program (Total Minority Respondents)	74
TABLE 30	Comparative Between Minority and Non-Minority Respondents - Interest in a Pre-allied Health Program	75
TABLE 31	Interest in Elective Courses for Pre-allied Health (Total Minority Respondents)	76
TABLE 32	Comparative Between Minority and Non-Minority Respondents - Interest in Elective Courses for Pre-allied Health ...	77
TABLE 33	Interest in Learning Specific Secretarial Skills (Total Minority Respondents)	78
TABLE 34	Comparative Between Minority and Non-Minority Respondents - Interest in Specific Secretarial Skills	79
TABLE 35	Interest in Work Study for Pre-allied Health (Minority Total)	80
TABLE 36	Comparative Between Minority and Non-Minority Respondents - Interest in Work Study	81
TABLE 37	Interest in a Pre-allied Health Program (Male Responses in Academic Percentile Groups)	83
TABLE 38	Interest in a Pre-allied Health Program (Female Responses in Academic Percentile Groups)	83
TABLE 39	Comparative Between Male and Female Responses in Academic Percentile Groups - Interest in a Pre-allied Health Program	84
TABLE 40	Interest in Elective Courses for Pre-allied Health (Male Responses in Academic Percentile Groups)	85

TABLE 41	Interest in Elective Courses for Pre-allied Health (Female Responses in Academic Percentile Groups)	86
TABLE 42	Comparative Between Male and Female Responses in Academic Percentile Groups - Interest in Elective Courses	87
TABLE 43	Interest in Learning Specific Secretarial Skills (Male Responses in Academic Percentile Groups)	88
TABLE 44	Interest in Learning Specific Secretarial Skills (Female Responses in Academic Percentile Groups)	88
TABLE 45	Comparative Between Male and Female Responses in Academic Percentile Groups - Interest in Specific Secretarial Skills	89
TABLE 46	Interest in Work Study for Pre-allied Health (Male Responses in Academic Percentile Groups)	90
TABLE 47	Interest in Work Study for Pre-allied Health (Female Responses in Academic Percentile Groups)	90
TABLE 48	Comparative Between Male and Female Responses in Academic Percentile Groups	91
TABLE 49	Time Frame for the Pre-allied Health Curriculum	96

ABSTRACT

PRE-ALLIED HEALTH CURRICULUM:
A MODEL PROGRAM FOR USE IN COMPREHENSIVE
URBAN SECONDARY SCHOOLS

February 1987

Martha V. Samourian Bedrosian, B.A., Boston State College

M.Ed, Boston State College,

Ed.D., University of Massachusetts

Directed by: Dr. Kenneth A. Parker

Today, as a result of increased medical knowledge and improved medical practices there is an extension of life with no guarantee of quality life. Elderly and young alike become ill through injury or natural causes and they are living longer than would have been expected twenty to thirty years ago. There is a rather demanding need for health occupations personnel not all of whom need be college graduates or post graduates.

As an educator involved in medical technology, secondary education and continuing education at the community college level, an interest emerged to develop a career training curriculum for health occupations at the secondary school level. To date there does not seem to be a single concise program that accomplishes the task of

providing both a sound basic education with career training to prepare individuals for entry level positions or continuing education.

The purpose of this study was to develop a health occupations curriculum which would bridge the career education/basic education gap. The pre-allied health program major will be of value as a model curriculum for use in comprehensive urban secondary schools, and easily can be tailored to the specific needs of a community.

Historical and legislative investigations in health occupations, and extensive analysis of current curricula were coupled with personal interviews with health occupations administrators and educators and administrators from health care facilities. A student needs analysis was devised and administered to eleventh and twelfth grade students in an urban secondary school to determine interest in such a program from a student's perspective.

The proposed curriculum interfaces career education with academics. Included are rationale and conceptual focus of the curriculum, program objectives, and instructional approach. The health care field is an area where technology, medicine, and human services are linked together. The field offers career opportunities which can

lead to gainful employment and financial security while providing a worthwhile service. With this in mind, orientation of students toward a career education is the direction of the future. It is the responsibility of administrators and educators to prepare our youth by providing valuable educational experiences in order to foster self-esteem and a desire for a quality life.

CHAPTER I

Introduction

Today, as a result of increased medical knowledge and improved medical practices there is an extension of life with no guarantee of quality of life. Elderly and young alike become ill through injury or natural causes and are living longer than would have been expected twenty to thirty years ago. There is a rather demanding need for health occupations personnel not all of whom need be college graduates or post graduates.

The need for health occupation personnel was first assessed from sociological aspects, such as general population demographics, life expectancy, and medical advances.

Statement of the Problem

As an educator involved in medical technology, secondary education and continuing education at the community college level, this author is interested in developing a career training curriculum for health occupations at the secondary school level. An initial ERIC search was conducted to determine what curricula materials were currently available. Much of the material found was not suitable for comprehensive urban secondary schools.

It was apparent that health occupations programs are geared toward specific area such as medical records aide, laboratory aide, homemakers aide and medical assistants. To date, there does not seem to be a single comprehensive program that accomplishes the task of providing both a sound basic education with career training to prepare individuals for entry level positions or continuing education.

Purpose of the Study

One of the intents of this dissertation was to demonstrate the expressed need for health occupations personnel from a variety of aspects, including employers, educators and students.

Nursing homes, hospitals, and acute care facilities that accept chronically or terminally ill patients are seeking employees for the health occupations. There are long waiting lists to place persons from acute care facilities into chronic care hospitals, and there is a lack of trained health occupations personnel within these institutions. People are needed in order to properly care for patients and to provide the kind of care that will put the family members of patients at ease and reassured that their loved ones are being cared for in the best possible way.

The purpose of this study was to develop a health occupations curriculum which would bridge the career education/basic education gap. It is called a pre-allied health program major. The curriculum will be of value as a model curriculum to be implemented in comprehensive urban secondary schools. The benefits of the curriculum will be that it can be tailored to the specific needs of a community.

Importance of the Study

To ensure adequate input from employees, educators and students, the following procedure was followed. A meeting was held with several Boston area health service administrators to discuss the need for health care personnel at the entry level, and the feasibility of student involvement in a health care facility while enrolled in a training program for health occupations at the secondary level. Answers were sought pertaining to employer preferences. What type of person and what kind of qualifications were desired? What areas in the health occupations support entry level personnel, and were any areas potential trainee positions? What was the average acceptable age for students seeking to complete field-based work, and would employers be willing to set up a system of offering employment to students who had

successfully completed the field work at the facility?

Once the employer preferred characteristics of the work force had been established, interviews were conducted with vocational educators and administrators to demonstrate from different perspectives the apparent need to provide a sound basic education in addition to career training.

Career training can be in many areas. Health occupations is one area where many entry level positions seem to be not only available but on the rise. Also, health occupations can be an area of career interest for secondary students. Connected with that interest is a need to determine if educators generally feel that a comprehensive program in the health occupation field ranging from career education and medical terminology to patient care, is feasible. Could a sound health occupations career foundation be provided in order to facilitate students into entry level positions after graduation or into specific professional programs at the community college level or at a technical school?

More specific information was sought from vocational educators in the health occupations, that is, current programs in use, the structure of the curriculum, types of student interested, age, sex, academic ability, and ethnic background. Information on publishing companies,

recommendations on texts, audiovisual materials, and lab manuals was noted. Field-based work was discussed, and the time frame for accomplishment was assessed.

The opinions of health administrators combined with the opinions of vocational administrators and educators were studied in order to devise a survey to ascertain information helpful in the development of a health occupations career training program at the secondary level. Additional areas of investigation included projected personal plans and student interest in science and related course work. The material was compiled, analyzed, and then charted as percentages. Health administrators and vocational educators felt that fifteen to sixteen year old students should be approached, therefore the survey was administered to a random group of juniors and seniors in an urban secondary school.

Respondents were divided into male and female groups to see if there was a difference between the sex of an individual and his/her interest in health related careers. An average age and grade were computed so that the study could be beneficial in assessing what age group should be addressed; a necessary step in the development of a curriculum. Ethnic background was considered important in order to determine minority and non-minority interest in a health occupations program at the secondary

level.

The responses to the above mentioned questions was necessary to set parameters for the development of a curriculum that would be challenging and motivating. A question was included to determine how many students taking the survey were already involved in a career education track through occupational education in the school where the survey was conducted. Academic averages were requested so as to categorize students into percentile groups. This information was useful in analyzing approximately five additional questions which dealt directly with developing the curriculum and the course offerings of such a program.

Students were asked if there was an interest in entry level career training or continuing education at the community college level and if a program were offered in the health occupations would there be an interest. Specific interest in medical terminology and anatomy and physiology was sought, and then students were asked if they would be interested in coupling such courses toward a future career as a professional secretary. Interest in doing work study or field-based work was determined since this is an integral part of any career training program.

The responses to the questions were a means of

indicating with some validity what age group, academic percentile, ethnic background, and sex of a student student expressed an interested in a career education orientated toward the health occupations.

Steps were taken in developing the curriculum to ensure a mesh with academics, career preparation and field based work experience. The program was science orientated and the course work also fulfilled science requirements at the secondary level in light of the present national goal to increase science requirements in all systems.

Definition of Terms

Acute care facility - a health care institution dealing with patients who become ill suddenly and unexpectedly and the care of these individuals is not intended to be long term.

Terminal care facility - a health care institution dealing only with those patients who are not expected to recover from the illness or the extent of an injury.

pre-allied health - this term refers to any positions not requiring specific professional training or a college education.

technician - individual specifically trained for a position but not required to hold a bachelor degree.

technologist - individual specifically trained and required to hold a bachelor degree. requirements for a bachelor's degree.

Scope and Delimitations of the Study

The curriculum offered in this dissertation is a model guide curriculum in health occupations for use at the secondary level. Each school district interested in implementing the program can specifically tailor the curriculum to suit their scheduling needs as well as to accomodate the local hospital facilities where students will do their field based work. The curriculum includes course goals and learner outcome programs. It is geared to the intermediate level using unit names and with the suggestion of publishers and materials to be utilized. Update will be required as with any other curriculum. Specific lessons are not prescribed which allows for flexibility in the way specific topics can be approached and taught by the responsible teacher.

In the curriculum a balance is sought between and among academics, career preparation, students and industrial and health-care-facility job-skill

requirements. Therefore, the curriculum is structured to advocate a particular instructional approach. The approach is well thoughtout, and input from educators presently involved in dealing with career education was utilized. At no time should the academic flow in a comprehensive high school be disrupted, nor will the career training be so demanding as to take time away from academic studies.

CHAPTER II

Historical Background and Review of Literature

The health care field is an area where technology, medicine, and human services are linked together. The field offers career opportunities which can lead to gainful employment and financial security while providing a worthwhile service.

Health occupations can range from basic entry level positions to positions which require a college education, intense training, and possibly certification. The end result of this dissertation is a curriculum designed to prepare students for entry level positions in health occupations; that they may gain self satisfaction and gainful employment in addition to an education.

Today, many secondary schools are increasing academic demands and making graduation requirements more stringent. However, administrators and teachers must bear in mind that not all students will go on to higher education.

A general opinion has emerged from discussions during interviews with health care administrators, vocational educators, and vocational administrators that there is a twofold need at the secondary level: 1. to offer career training in health occupations for entry level positions, and, 2. to provide a general education foundation which

will enable students to make a smooth transition into a technical school or community college after graduation. An appropriate amalgam would be a curriculum that offers a sound basic education combined with a career education. This is not only inherent but has been documented in the literature pertaining to health occupations and allied health careers.

Curriculum development is the improvement of instruction in any subject, field or aspect of the educational program. "Curriculum" is a generic term meaning totality of learning experiences for students. Not to be overlooked is the fact that local efforts in the process of curriculum development are rewarding experiences for administrators, instructional leaders, planners, innovative teachers, and the school community. (1)

A growing population, extended life span, increased awareness of health care and availability of health care services has resulted in a demand for professional and paraprofessional personnel.

The great need for health care workers has been attributed to the impact from legislation of the Medicare, Medicaid programs, new health care technology, the widespread utilization of private medical insurance and the increased accessibility of medical care facilities. (2)

Among the factors which have put a greater demand

upon the need for health occupations personnel is chronic illness requiring long term care. During the 1900's the leading causes of death in the United States were infant diarrhea, pneumonia, and tuberculosis. All of these illnesses are relatively acute in onset and would, in a short time, result in death. (3)

Today, the leading cause of death is coronary heart disease, cardio-vascular disease, and cancer -- all of which could be classified as chronic illnesses requiring long-term care, although death could suddenly occur. (4)

With the coming to adulthood of children born after World War II, the baby boom, the population of people who require health care has increased. This has affected the need for health care facilities. (5)

At the end of World War II the ratio of hospital employees to beds in the acute general hospital averaged somewhere between one and one half to two employees per hospital bed. The end of the seventies brought the average ratio to almost three employees to a hospital bed, with some having as many as six employees to a hospital bed. Similarly, as the need for additional employees increased, the need for trained personnel in the existing job categories and the demands of these jobs increased. Thirty years ago, the duties of a nurse's aide required only the most rudimentary elements of patient care. Now,

the nurse's aide is responsible for many of the activities previously performed by the registered or practical nurse. Similar changes have taken place on every level of the hospital's organizational and personnel structure. (6)

In the job market, two out of every three openings represent replacement while one out of every three represents growth. This has been noted in New York City and in similar large urban areas . In these areas, there will be a large number of vacancies in the health occupations through the replacement factor alone. Added to this will be the continual growth of the aged population. Specifically for the health care field, the occupational projections indicate greater than average growth for dental assistants, dental hygienists, dental laboratory technicians, medical records technicians, practical nurses, occupational therapists, physical therapist assistants, and so forth. (7)

Total employment in Massachusetts is expected to approach 3,150,000 by 1990. Commercial and industrial expansion, rejuvenation of the construction industry, and rapid growth in sales and service industries will add more than 337,000 new jobs to the Massachusetts economy, a projected growth of 12 percent between 1980 and 1990. (8)

Between 1980 and 1990, more than 20 percent of all new job openings in Massachusetts will occur in the

health services industry. Although administrative, clerical, and other supportive occupations will account for much of the total increase in employment, professional and technical medical occupations are projected to increase by more than 33,000 persons or 27 percent during the decade. (9)

Professional nurses, the largest occupational category in the health services industry, will experience the greatest increase in demand with a growth of 30 percent, or nearly 14,500 workers by 1990. Employment opportunities for professional nurses will be more numerous than for any other medical worker category, with about 3,700 vacancies occurring each year. The increasing demand for nurses will be accentuated by growing needs for specialized nursing skills in emergency and operating room procedures and in geriatrics to provide services for our rapidly increasing number of elderly people. During the late 70's there was an acute shortage of nurses. The recessionary periods of the early 80's has alleviated some of the shortages experienced by hospital administrators by both drawing many nurses back to work and converting many others from part-time to full-time employment. (10)

Despite these recent trends and movements in cost containment demand will remain high throughout the remainder of the decade. (11)

Distinguished from registered or professional nurses essentially by length of formal education or training and by limitations on allowable areas of responsibility, licensed practical nurses will experience significant employment growth of about 20 percent during the projection period. While most of the increasing demand will be generated by hospitals, clinics, nursing homes and other medical facilities, the rapidly growing private health care agencies, industrial plants, and increased demand for private, in-home nursing services will create additional employment opportunities for licensed practical nurses throughout the decade. (12)

As population growth and expanded medical insurance coverage increase the number of people seeking professional medical attention, more than 700 physicians and surgeons will be needed each year. The number of surgical operations being performed annually has increased dramatically, due to spectacular advances in the development of safer, more effective surgical techniques. (13)

As these trends continue, employment for physicians and surgeons is projected to grow by 25 percent to nearly 22,000 by 1990. On the other hand, with medical enrollments rising and foreign students seeking employment in this country, the supply of physicians should be adequate to meet future demand. Competition for positions

should be more intense in the metropolitan Boston area where the patient to physician ratio is low. The 19 percent growth rate for dentists is the lowest among health practitioners. Although demand is still high, the future supply of dentists should be more than adequate. Other health practitioners, while much smaller in numbers, will experience the greatest demand. Growth rates for chiropractors, podiatrists and veterinarians will all exceed 33 percent. (14)

Therapists work directly with injured, disabled, elderly or emotionally unsettled patients using a variety of techniques to help their patients regain their physical and emotional independence. Overall demand should increase rapidly during the projection period. (15)

Physical therapists, noted as the largest category of health occupations by Steller and Hastings, will experience an employment growth of 38 percent by 1990 while occupational therapists will rise the fastest at 47 percent. Continued support for rehabilitation programs should keep demand high for both occupations. Employment of respiratory therapists will grow by 30 percent. Heart and lung problems occur at a greater frequency among the elderly population which is the fastest growing segment. Since technological advances are making surgery safer and more effective, surgical operations are becoming more

prevalent, thus placing a greater demand on health occupations personnel. (16)

A report prepared by the Northeastern University Center for Labor Market Studies for the Bay State Skills Commission stated: "at most Massachusetts hospitals, tasks associated with respiratory therapy departments are in fact done by workers with diverse training and credentials." Therefore, "beginning in 1983, the different delineations of respiratory therapy will become more formalized through a series of tests offered by the National Board for Respiratory Therapy." This enactment will "... drive respiratory departments to emphasize specialization, diagnosis and therapy;" and will result in a "... better trained staff to carry out these more advanced functions. (17)

Demand will approach 30 percent for both radiation therapy technologists and x-ray technicians, however, an acute supply shortage only exists among radiation therapy technologists. The Northeastern University study further states that "the extraordinarily rapid growth that has occurred in the occupation (radiation therapy technologists) has resulted in shortages which have manifested themselves via a high vacancy rate within the occupation ... given the relatively rapid growth in demand within this occupation and virtually no growth in supply it

appears that a substantial training gap exists. Further compounding this problem is the fact that other workers are not readily substitutable for radiation therapy technologist. (18)

Employment for supportive laboratory technologists and technicians is expected to grow by 32 percent to a 1990 level of almost 10,000 workers. Primarily engaged in specialized testing and analysis of blood, tissue and other bodily substances, technicians will continue to experience substantial growth in employment opportunities as physicians expand their use of such services in routine physical checkups and diagnosis of possible medical problems. (19)

Greater health consciousness and the widespread availability of public and private health insurance programs will contribute to employment growth. (20)

Although the changes will not be as large numerically, employment in several other technical occupations are expected to record increases of over 25 percent during this period. With new medical and technological advancements prompting more corrective surgical procedures, a strong demand will persist for surgical technicians to prepare operating rooms and assist during surgery and for electrocardiograph and electroencephalograph technicians to monitor patients' vital signs.

Emergency medical technicians will be more visible in high risk industries such as at construction sites, where reducing the amount of time in reaching an injured person can save lives. Many certified EMT's have other job titles or work on a voluntary basis. Dental hygienists and assistants have become an integral part of the dental office, relieving the dentist of many routine tasks. The trend toward dental group practice should enhance demand. (21)

Total employment in professional and technical medical occupations is projected to grow to nearly 158,000 persons by 1990. (22)

Of the 36 major occupational categories analyzed by Steller and Hastings, only four are expected to experience employment increases of less than 20 percent, with considerable growth occurring for these as well. In general, with an increasing health awareness and expanding medical technology, the employment outlook is very good for professional and technical medical occupations throughout the 1980's. (23)

It has been noted in the literature that in 1985 there were 142 workers for every 100 people aged 45-54. In 1972, there were 98 workers for every 100 people between those ages. This will mean more people competing for the fewer advanced positions. For those in line and

for those coming after them, it looks as if there will be a promotion squeeze and concomitant underemployment. It appears that there will be many unmet expectations with perhaps disappointment at work more commonplace than it is today. Implications for career education developers and practitioners may indicate increased attention to the affective parts of the curriculum as well as to identifying and building more transferable skills and knowledges. (24)

The New York Board of Education appointed a statewide health occupations education review committee to examine the curricula in health occupation programs from a futurist perspective. The choice of this perspective was dictated by the fact that new developments and greater use of advanced technology have revolutionized many occupations. These changes have resulted in new practices and procedures in many occupations which in turn require new competencies of employees especially at the entry level. (25)

During the seventies, new jobs were emerging with new titles which were non-existent following World War II. Titles such as "Cardiopulmonary Technician," "Nuclear Medicine Technician," "Respiratory Therapist," "Critical Care Nurse," "Physician's Assistant" and "Nurse Practitioner," as well as numbers of others. (26)

With the continual advances of technology and the creation of new jobs with new titles, there exists a thriving health industry in this country.

An ever increasing number of allied health functions are being changed by new technologies and there is every reason to believe that changes in the next two decades will be even more dramatic and far reaching. (27)

As a result of new equipment and procedures, new occupations have come into being--occupations that span a variety of speciality areas, technologies, and skill levels. Some occupations represent new developments within an established field. For example, radiation oncology therapy and nuclear medicine are relatively recent specializations within the century-old field of radiologic technology. Other occupations reflect the emergence of entirely new fields. Dialysis technicians, for example, work in the field of nephrology--the study and treatment of kidney ailments. (28)

According to the U.S. Department of Labor, good opportunities exist in many emerging health fields on the technologist and technician level. Several promising new fields are diagnostic medical sonography, radiation therapy technology, nuclear medicine technology, perfusion technology, cardiology technology and cardiopulmonary technology, dialysis technology and biomedical equipment

technology. In general, the education and training requirements for these and other new health occupations on the technologist and technician level vary enormously. Usually, the technologist occupations require more formal training than technician occupations. (29)

As a general rule, the newer the occupation, the more likely that training will be provided on the job. However, formal programs provide the most comprehensive training and are favored for most occupations. Certification and licensure requirements vary for these new occupations. For some very new fields, there is no formal certification process. In some occupations, gaining credentials is purely voluntary, but in others, a State license is required. (30)

Similarly, the cost of health care and the shift from an infectious disease model to a health management or prevention model will lead to further changes in the health care field. The attitudes, competencies, knowledge and skills required of health occupation personnel have undergone major changes in the past. Requirements will continue to change as automation becomes an increasingly important factor in the homes, places of work, and health facilities of the state, nation and the world. (31)

It is therefore vital that recommendations take into account these expected technological advances, the altered

needs of the health delivery system and in turn, the new competencies required from Health Occupations Education programs. (32)

The drug industry is having a resurgence of growth-- free standing laboratories, medical supply manufacturers, builders, real estate developers, research and consulting organizations are delving into such diverse areas such as medicine, administrative and management techniques, purchasing services, and computer technology. All of these add to the growth of a comprehensive industry that is perhaps the second or third largest industry in the nation if not in the world. (33)

A health industry has emerged, but is there an awareness of the health occupations which are presently available from entry level positions to certified Positions? It is imperative that students become aware of what the health occupations entail and where the opportunities for potential advancement exist.

This awareness can be introduced at the junior high level so that once a student reaches the secondary level, the thought process toward a career goal will have commenced.

At the secondary level, students can be given the opportunity to see first hand those occupations which are a necessity within the local health care facilities.

Additionally, with the coming and going of persons in diverse areas of health related professions within the local health care facilities this would be an experience worth the time and effort. Even more interesting is the potential that students could be earning credits for these experiences while going to school.

The health related jobs should be inventoried and analyzed in order to determine job content and then reorganized into clusters that reflect similarity in content and potential for development. What is required, in addition to the analysis of a job, is the evaluation of life experiences in health career areas. Systems must be structured for measuring and weighing the impact of these experiences on life so that credit can be given toward a future career goal. (34)

Finally, all these must be incorporated into a training program that is both academically and clinically oriented. Projections through 1990 indicate that positions requiring education below the baccalaureate degree will continue to grow substantially faster than those above the baccalaureate level. (35)

In 1982 the New York State Education Department revised the existing Health Occupations Education Program and determined that such a program should be capable of preparing students with skills, knowledge and attitudes

required on the job both in the present and in the foreseeable future. Such preparations should make students more readily employable and more capable of adapting to changes in practices and procedures once they are in the job. (36)

Concerns were also given to recommending a curriculum which would be educationally sound both in the present and the foreseeable future with provisions for rapid and effective updating as it becomes necessary due to technological changes. (37)

The revised curriculum structure will lead to more effective administration and organization of the new program structure and more efficient curriculum development. (38)

To gain insight into the history of health occupations education at the secondary level ERIC searches were conducted. Numerous articles written by both educators and persons in the health related industry document the need for health care personnel. To substantiate this need researchers and educators alike cite a growing and aging population as well as chronic illnesses.

We are in a society of ongoing changes manifesting as rapidly in the health-care system as in other areas. Some changes in the health-care system are related to a new public awareness of individualized health and health main-

tenance. This is giving rise to a rapidly proliferating health promotion industry which is largely carried out by allied health personnel. New technology should facilitate health care, but it will alter the training requirements of those who provide it. These factors suggest the importance of reviewing the Health Occupations Education curriculum so that the skills and attitudes taught in these programs could continue to meet with the emerging demands of the health industry. (39)

As population, disease patterns, and technology change, so does our health care delivery system. Our older population will have more long-term, chronic illnesses leading to an increased demand for care in a variety of institutional and community settings. Medical care is becoming increasingly organized into major care corporate systems.

Three basic categories of necessary skills are predicted to accommodate these changes: flexible skills to deal with new technology, administrative skills to manage and utilize data, and social skills to communicate with and care for people. (40)

The Statewide Health Occupations Education Review Committee for the New York State Education Department made several recommendations toward renewing the present Health Occupations curriculum.

These recommendations are extremely relevant to anyone engaged in an effort to revitalize an existing health occupations education curriculum or to create a new one for the secondary level or adult education programs. Recommendations include: 1. continued access to Health Occupations Education programs at secondary and adult levels by such special groups as disadvantaged and handicapped individuals (provided that this is not inconsistent with the health and safety requirements for both students and patient populations); 2. opportunities for access to Health Occupations Education programs by under-represented segments of the population. Attempts should be made to recruit under-represented populations of all kind for the sake of equity, so that different individuals will have successful role models with which to identify; 3. adequate guidance and counseling with an emphasis on program requirements, the availability of jobs in the health occupations, and the likely earnings in the jobs; 4. special sensitivity to the special needs of some of the under-represented and disadvantaged population. (41)

A health occupations education program is justifiable from a humanist perspective, and now educators seem in agreement that students need and deserve the opportunities which such a program can offer.

Other recommendations concern the issue of clinical

training, certifications, requirements of instructors of Health Occupations Education programs and student evaluation policy. Appropriate supervised clinical experience should be required to meet defined educational and performance objectives or clinical competence should be demonstrated in the work setting for areas having direct patient contact such as Dental Assistant, Medical Assistant, Nurse's Aide, Homemaker/Personal Care Services Provider, Emergency Medical Technician, Rehabilitation Aide and similar occupations. Students enrolled in programs not requiring direct patient contact should not be required to have supervised clinical experience but should be required to meet the usual performance and educational objectives. These include areas such as Dental or Medical Administrative Assistant, Ward Clerk, Central Supply Aide and Pharmacy Aide. (42)

Schools that establish linkage with community agencies, community groups, business, and industry establish an interaction that is important to the realistic integration of Career Education into the existing curriculum. Communities are abundant with resources that may not be readily apparent and which no audiovisual aid can rival. These resources and resource people depict life styles associated with occupations and opportunities for work exposure and work experiences.

Recent graduates provide motivation to those still in school because of the rapport they establish with those within the same generation bracket. Senior citizens offer the experience and historical aspects of careers and life. Community groups, agencies, business and labor representatives can support education by providing classroom speakers and career observation sites. They assist schools by participating on school advisory committees. They can be involved in curriculum recommendations, assisting in student placement, and in recognizing graduates qualified for apprenticeship programs. (43)

Teacher qualification is another issue raised by the committee. Health Occupations Education programs prepare the youth and adult populations for entry-level jobs in health facilities. This makes it vitally important that teachers have practical on-the-job experience as health practitioners so that the curriculum can be made relevant to students preparing for employment. It is also important for Health Occupations Education teachers to have adequate general educational preparation and to be able to adapt to the rapid pace of change in the health occupations. They must be able to prepare students with communication, decision making, and other generalized skills. Adequate inservice teacher education is a necessity, so that the Health Occupations Education teacher

will have practical employment experience in their area of speciality, adequate technical and general education, as well as teacher preparation. Continuing education should be provided for teachers so that they may effectively develop or revise Health Occupations Education curricula. (44)

Educators concerned with curriculum development must remember that the need is to redirect education and not to toss away what is already there only to start over again. Teacher training through in-service workshops, summer training seminars or on-the-job summer employment in health care facilities are all possibilities in redirecting education in order to successfully teach the basic skills as well as have a career orientated program.

The next issue deals with determining student competency. Individuals in the position of evaluating competency are required to do so without the interference of personal opinions, expectation, or without the shadowing of any information one may have on a particular student. This is indeed a very difficult task. Thus, it is very important to devise a satisfactory method to evaluate a student's ability in health care procedures, clinical experience and the basic skills.

One essential consideration in implementing the evaluation of student progress is the assessment of all

essentials for safe practice in each curriculum area. Skills and areas of knowledge judged necessary for the safe care of clients/patients must be included in an evaluation. All students should be required to attain mastery of these practices. Additionally, the evaluation system should assess curriculum content and specific skills. Where mastery of a clinical skill is assessed, the evaluation should be in the form of examining the behaviors in a context similar to that in which the skill is to be practiced, e.g., in the field. On the other hand, where the content is in the form of knowledge or skills required in the future, a traditional evaluation instrument for such (multiple choice, matching, short answer and essay) may be appropriate. The examination must be prepared with all necessary concern for its reliability, validity and objectivity in scoring and administrative procedures. The evaluation of competence should be implemented on a statewide basis, and at all times it should take into account the variety of student populations enrolled in a variety of programs. (45)

It is more and more evident that there is a need for educational programs at the secondary level to offer basic education as well as career opportunities. For the health occupations, these positions will be entry level; however, the potential for growth in the health careers is

there for those students who desire to advance. Career education, career awareness and guidance counseling will lead students to available educational programs at technical institutes, in community colleges or at the college level. In order to document what is presently available to students at the secondary level in career education, career awareness and guidance counseling, a second ERIC search was conducted.

The basic thrust of career education is to make the classroom experience a meaningful and significant learning process about all phases of life. In order to accomplish this the existing curriculum must be re-orientated and re-directed in such a way so that the basic subject matter becomes something the students can clearly relate to the world in which live. (46)

In the State of Arizona, career education is defined as combining the academic world with the world of work. It must be available at all levels of education from kindergarten through the university. A complete program of career education includes awareness of the world of work, orientation to occupations, in-depth exploration of selected occupational clusters and career preparation for all students. This calls for all basic education subjects to incorporate career education as an activity. Some people say that education and career education are synony-

mous terms because career education is one of the important goals of education. (47)

Once career education is accepted as an integral part of education, educators can devote their time to making the students aware of the career opportunities that are open to them. For this we need guidance counselors willing to devote time and energy.

To be most effective, the counseling attitude must permeate the entire environment. This means that counseling cannot be confined to the counseling offices, but must be a function of the home, the community and the total school personnel. Teachers and counselors are vitally important in achieving the outcome of career education, but, it must be a team effort to be really effective. Therefore, teachers become counselors and counselors become teachers--working together for the benefit of students. (48)

It is obvious that much work must be done if consistent guidance counseling is to be accomplished for the health occupations in the areas of career awareness, teacher qualification, program and student evaluation. A network must be developed between school systems within states as well as throughout the nation in order to maintain continuity.

The New York State Board of Education Review

Committee discussed the importance of providing adequate guidance services for the Health Occupations Education curriculum. Since every student has the right to choose a vocational education program, it is vital that guidance counselors become familiar with Health Occupations Education policies, procedures and curriculum options. This should be done at least one year in advance of their implementation in order to help students adequately plan their programs of study. The committee also recommends continued close contact with the guidance community to exchange information regarding the health care industry's personnel needs in different regions of the State and available programs to prepare students for these positions. Close articulation with guidance counselors is necessary to help students develop appropriate career plans in the health occupations. (49)

This is only the beginning of an enormous endeavor. The health occupations do not stop at the health care facilities or at the college level. Opportunities exist at the graduate level as well as in industry. Although the concern expressed in this study is for secondary education, these students must know that there are other opportunities presently in the work field with continued growth on a daily basis. Careers exist in related areas such as pharmaceuticals, radiopharmacy, making of prostheses,

acupuncture, biomedical engineering, computers in medicine, public health and many other areas.

The success of health occupations education programs will not be evaluated on how many competencies are included in the program but rather how successful graduates are in the careers that are entered. This will be judged by supervisors and graduates and not by educators. Therefore, competencies in the curriculum must include business and industrial needs. Educators know that these competencies must be the basis of a program. The New York Department of Education suggested that in order to structure a program a workable two-way communication between administrators and teachers must be developed. (50)

With this in mind, orientation of students toward career education is the direction for the future. It is the responsibility of administrators and educators to prepare our youth by providing valuable educational experiences in order to foster self esteem and a desire for a quality life.

Legislation

Training students in health careers is traditionally under the direction of vocational or occupational education where funding is appropriated through specific, legislation. The following is a chronology of the legislation for vocational education and more specifically acts which have had a direct impact on training for the health occupations.

In 1917, the first major legislation was passed for the appropriation of money for vocational education. The Smith Hughes Act of 1917 led to the creation of the Federal Board of Vocational Education and provided funds for vocational education at the secondary level. The funding aided the areas of agriculture, trade and industry, home economics as well as training for teachers. (51)

After passage of the Smith Hughes Act of 1917, health occupations education at the vocational and technical level began with the development of the practical nurses' education. The George Barden Act of 1946, an amendment and extension of the Smith Hughes Act of 1917, provided additional funds for the support of educational programs to prepare practical nurses. Later, practical nursing was aided again with the passage of the Health Amendments Act of 1956 (Title II of the George

Barden Act of 1946). (52)

At this time, most of the money appropriated for the health occupations went to practical nursing. Then, the Manpower Education Act of 1962 was passed. Its purpose was to train unemployed workers for available jobs and to retrain underemployed workers for the jobs with greater responsibility. The Vocational Education Act of 1963 resulted in the federal government making a total commitment to vocational education. (53)

The act required each state to have a state plan for vocational education, state matching funds, and an advisory committee on vocational education to be established in the United States Office of Education. This legislation also defined vocational education and spelled out provisions for approving work study programs for persons fifteen to twenty years of age. (54)

The results of the legislation contributed to the surge in the area of health occupations education. This was not the end of funding, for within the next five years the Vocational Education Amendment of 1968 increased the number of members of the national advisory council on vocational education and provided for their appointment by the President. The council published eleven reports. The seventh report addressed the issue of youth groups in vocational education and mentioned the development in some

states of a new organization for students enrolled in health occupations education. Title II EPDA Amendment of Higher Education Act of 1965 provided programs for in-service education and short term institutes for vocational education (EPDA - Educational Personnel Development Act). Many health occupations education teachers, supervisors, and administrators took advantage of opportunities under the EPDA legislation. The Educational Amendment of 1974 provided firm support for career education. Based on the need for every person completing secondary school to be prepared for gainful employment according to ability this legislation established the office of career education in the U.S.D.E. and a national advisory council on career education. Public Law 94-142 dealt with placing learners with handicaps in less restrictive environments with implications for health occupations. (55)

As time went on, other accomplishments to support health occupations occurred. Educational specialists and state supervisors of health occupations education were appointed. These persons had both occupational and professional experience in the health occupations. Teachers and supervisors in health occupations education who were members of the American Vocational Association held membership in the Trade and Industrial Education Division. The increase in members resulted in a separate AVA Health

Occupations Education Division with three organizations within the divisional structure. These were the

- 1) National Association of State Administrators in Health Occupations Education (NASAHOE)
- 2) Association of Health Occupations Teachers Education (AHOE) and
- 3) Association of Health Occupations Teachers (AHOT).

At this time, more organizations are expected in the future. The Vocational Industrial Clubs of America (VICA) and the Health Occupations Students of America (HOSA) were formed as leadership organizations for students enrolled in trade and vocational education. The Health Professional Education Assistance Act of 1976 contained elements for change to meet such national needs as providing more primary care practitioners and improving health services. Section 1123 of the act provided for the establishment of qualifications for health personnel under the Medicare program. Methods were developed to determine the proficiency of individuals who did not meet the formal requirements for performing the duties of various types of health care. Obviously, this had implications on the philosophy of health care, organizational change, role legitimation, recognition and program development. (56)

Since the Health Professional Education Assistance Act of 1976 there has been no other specific legislation for the funding of health careers. There had been almost

a moratorium on federal spending in all areas of education
In the state of Massachusetts, this culminated in 1981
with Proposition 2 1/2. At this time cuts were made both
at the educational level and the administrative level.
As a result, curriculum development in all areas was
curtailed. Now, five years after Proposition 2 1/2 in
the state of Massachusetts and nearly ten years after the
last federal assistance act for education in the health
professions, Congress passed the Carl D. Perkins
Vocational Education Act which reauthorizes federal
support for vocational education over the next four years.
This new act, also known as Public Law 98-524 , is an
amendment to the 1963 Vocational Education Act. It places
an emphasis on curriculum development and personnel
development among other things. The Division of Occupa-
tional Education in the State of Massachusetts has
developed a state plan for vocational education covering
fiscal years 1986-1988. Public hearings will be held to
review these plans. (57)

CHAPTER III

Methodology

Evidence from the literature resources indicate that there is a need both professionally and educationally for career training specifically in health occupations at the secondary level, and that these needs are not being addressed adequately.

Within several state departments of education, guidelines have been established to identify areas to be addressed by individuals engaged in modifying or creating a health occupations program (See Chapter II).

General skills sought by health care facilities include flexible skills to deal with new technology, administrative skills to manage and utilize data, and social skills to communicate with and care for people.

In an effort to see what state departments of education and individual school districts at the secondary level were attempting to do in Health Occupations Education programs, many interviews were conducted with persons involved in Health Occupations at both the administrative and educational levels. The Bureau of Research and Planning for the Massachusetts Department of Education proved to be extremely beneficial in securing contacts in other states as well as for obtaining printed

materials to review. (58)

An interview with a representative of the New York State Department of Education was valuable in obtaining information to develop evaluation methods and program improvements. In the development of a health occupations education curriculum, the concern should be with more than the immediate technical skills. It is necessary to incorporate both basic skills and specific techniques in the curriculum in order to train individuals to make a living. (59)

An interview with another representative from the New York State Department of Education led into a discussion of the Health Occupations Education programs in both comprehensive and vocational schools in the State of New York. Both representatives sent curriculum materials for review. Overall, the goals are to provide basic skills and to prepare students for entry level positions. (60)

A phone interview with a representative of the Connecticut Department of Education helped to assess the various curriculum materials presently used in school districts throughout Connecticut and led to a referral to contact a health occupations instructor in Middletown, Connecticut. This resulted in a trip to Middletown High School and an invitation to a workshop/seminar in May 1984. (61)

A day was spent at Middletown High School going through the the curriculum materials with the instructor who developed the program now in its second year. (62)

Throughout the discussion, positive aspects of the curriculum as well as problem areas were identified. Information was gathered on publishing companies and specific books recommended for use. Discussion led to specifics such as what type of student might find the health occupations education program of interest, what type of student would most benefit, and what type of student would be in demand?

In May, 1984, a workshop offered by the Connecticut State Department of Education in conjunction with three Connecticut school districts was attended. A series of three seminars delivered by representatives from different school districts presented curriculum materials and methods of instruction in the health occupations education programs. The participants were from

1. a comprehensive high school in an urban setting where the program in health careers is part of the Division of Occupational Education
2. a vocational education school offering a program in health occupations with a three week rotation schedule and
3. a comprehensive high school in an urban setting where the program in health occupations is part of the department of science. (63)

In June of 1984, representatives from several local community hospitals were invited to a presentation of a proposed health occupations education program. The intent was to gain insight and input from persons who would provide work settings for students seeking clinical experience as well as gainful employment for qualified graduates. (64)

During the interview with the representatives there evolved a general attitude and consensus indicating certain areas to focus upon at the secondary level so as to ensure a well developed program that is educationally sound and provides for a career education. Students must be introduced to basic skills pertaining to health care, including items such as personal care of patients, aseptics, and the tranporting of patients. The following areas must be included in a course of study in order to sucessfully complete a health occupations education program: Anatomy and Physiology, Clinical Chemistry, Microbiology and Nutrition. At the secondary level, the option remains to combine courses or to offer survey courses which would be adequate at this level of study. (65)

The need also exists to set aside a block of time for students to successfully complete an internship in a hospital work setting. The necessary amount of time to be

required is yet to be determined. The rationale behind block time results from experience on the part of the representatives from the local community hospitals. If block time is not scheduled, students will forget what they have learned the previous week and there would be too much inconsistency with hospital personnel and scheduling.

The concerns among health care administrators, and health occupations educators were numerous. These concerns demonstrate the balance that must be achieved between academics and career education within a program designed to accommodate students on an educational level, and health care administrators on a professional level.

In addition to opinions, numbers of health occupations education curriculum guides exist from almost every state in this country. For every health occupation there is a different curriculum guide. The need exists to develop one concise and complete curriculum guide for the health occupations. The curriculum must be adaptable to the needs of various school districts and it must draw interest from the student body. The basic format of the curriculum offered in this dissertation covers topics needed in a health occupation, and it ensures repetition of the basic skills thereby providing a well rounded education. Once a school district decides to implement this health occupations education program, the guidance

counselors would be introduced to the content and intent. Teachers would have the same introduction with the potential of Science, Mathematics and Vocational Education teachers becoming involved as instructors in the program. Once these steps are accomplished, the students will benefit from simultaneously obtaining a general education and preparing for a future career. For young adults, this program leads to a potentially successful future.

Selection of Subjects

The last issue was the determination of student interest for a pre-allied health major program at the secondary level. As a result, a survey (see Appendix A) was devised.

This survey was administered to a random group of eleventh and twelfth grade students from an urban high school after the first marking period of the school year. To ensure that a maximum number of students were reached, the survey was completed over five school days during English classes.

Questions in the survey were derived from information believed to be pertinent and valuable for objective analysis and evaluation of student interest as well as the need for a pre-allied health program major.

Data Processing and Analysis

The surveys were counted and a total number determined. Then, manually, the surveys were disaggregated according to male and female respondents and the percent of each was calculated. All additional demographics of the population surveyed was determined by manually going through the material, counting, and calculating percentages. Questions one through nine of the survey were the questions that supplied this information. The remaining questions (ten through thirteen) were also manually disaggregated and the percents computed. Then the tables were developed and comparisons were made and is presented in Chapter IV. Taken into consideration was academic ability, ethnic background, males versus females and a combination of the above.

Limitations

The survey was conducted in an urban comprehensive secondary school which was considered to be representative. The school is a multi-cultural, multi-ethnic school with a diverse student body. It would be of interest to survey other major urban secondary schools, analyze the data in a similar manner, and then draw parallels. It would also be beneficial to determine the grade levels of each of the groups responding to

questions ten through thirteen. This would help to give more insight into the grade level of respondents which when coupled with ethnic background, academic ability and sex would lend more conclusive data. Another interest would be to survey students from a comprehensive urban school that is in a more affluent community which would give more insight into what socio-economic group is being addressed. Educators are only beginning to explore the interest and need for career/academic education in comprehensive urban secondary schools.

CHAPTER IV

Review of Research Data

The survey mentioned in Chapter III was devised specifically so as to ascertain relevant information concerning interest on the part of students as well as attempting to target the grade level most appropriate to offer career awareness for health occupations and when to actually begin the curriculum. Based upon established guidelines in developing a health occupations program, it is necessary to determine minority interest, and the academic standing of respondents.

The survey was conducted and the data was disaggregated into male and female respondents of which there were 204 and 244, respectively, for a total of 448 students. The various responses to each question were tabulated and expressed accordingly as percents. Initially, percentages were computed for male and female respondents, and for the total number of respondents.

The surveys were then disaggregated into minority and non-minority groups, that is, American Indian, Black, Asian, Black of Hispanic origin, White of Hispanic origin, and White not of Hispanic origin. The minority groups were then again disaggregated into male and female respondents of which were 77 and 100, respectively, for a total of 177 minority students.

Questions one through nine contributed to the demographics of the population surveyed and was of use in determining specifics about the respondents.

Various responses to Question Ten through Question Thirteen were obtained, and the occurrence of the responses computed as a percentage for male, female and total minority respondents.

Once again, the surveys were disaggregated and this time according to academic standing. There were four groups consisting of 1) 100-90 percentile 2) 89-80 percentile 3) 79-70 percentile 4) 69-60 percentile. These groups were then divided into male and female respondents. The various responses for Question Ten through Question Thirteen (see Appendix A) were obtained and the percentages computed for male, female and total respondents.

Additional comments were requested at the end of the survey; however, few students chose to do so.

Analysis

The total number of students surveyed was comprised of 54 percent females and 46 percent males. The ethnic background of the respondents is summarized in Table 1.

Taking into account the expressed need to accommodate minority, disadvantaged, and handicapped populations

particular attention has been given to minority response versus non-minority response to the survey.

TABLE 1

Ethnic Background			
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>
American Indian	1.3	1.5	1.4
Black	27.1	23.5	25.5
Asian	4.2	3.4	3.8
Black Hispanic	1.3	0.5	0.9
White Hispanic	5.8	5.9	5.9
White not Hispanic	54.2	58.3	56.1
Unknown	6.3	6.9	6.5

The ages of the students was requested in the survey. However, the age of a student is unpredictable in grades nine through twelve, especially when dealing with students in an urban setting. Life situations cause disruption in a student's education making it virtually impossible to make educational decisions based upon age. Resultantly, the grade level of students according to sex is summarized in Table 2, and in Table 3, the percentage of students in grades ten through twelve is summarized based upon ethnic background.

TABLE 2

Grade	Grade		
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>
Grade 10	2.1	4.4	3.2
Grade 11	44.6	37.7	41.4
Grade 12	49.2	53.9	51.4
Unknown	4.2	3.9	4.1

Table 3

Percent of Students in Grade Ten through Twelve			
<u>Ethnic Group</u>	<u>Grade 10</u>	<u>Grade 11</u>	<u>Grade 12</u>
1	0	16.6	83.3
2	2.5	44.1	53.4
3	0	56.2	43.7
4	0	66.6	33.3
5	14.8	44.4	40.7
6	2.8	41.1	56.0
unknown	5.2	57.8	36.8

The urban high school where the survey was

administered was divided into four houses and three alternative programs. The following is a brief description of the houses and programs. House A,B,C,D housed the majority of the students. Each house had a House Administrator and one to two Teachers-in-Charge. Pilot, an alternative high school program, has the philosophy that education is the responsibility of not only the teachers but the students and parents. Fundamental, an alternative high school program, is academically intensive. Occupational Education, an alternative program, allows the students the option of a high school diploma in addition to obtaining skills in an occupation (see table 4).

TABLE 4

	House/Programs		
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>
A,B,C,D	70.1	63.2	67.3
Pilot	10.4	6.9	8.8
Fundamental	15.8	13.2	14.6
Occupational Education	1.7	16.7	8.6
Unknown	1.3	0.0	0.7

Academically, it was necessary to determine averages in percentile for the students who were surveyed and to correlate this with positive responses. This information is helpful in determining what academic level is being addressed. The curriculum in this study is presented at a level that accommodates students in a academic percentile range. The curriculum does not underestimate nor over estimate the academic percentile expected to be interested in a health occupations program. Of the total number of students surveyed, 35.6 percent were in the 89-80 percentile, 33.1 percent in the 79-70 percentile, 17.6 percent in the 69-60 percentile and the remaining below the 59 percentile (see table 5).

TABLE 5

Percent of Students in Academic Percentile Groups			
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>
100-90	10.8	4.4	7.9
89-80	40.8	29.4	35.6
79-70	31.3	35.3	33.1
69-60	11.7	24.5	17.6
Below 59	2.5	3.4	0.2
Unknown	2.9	2.9	2.9

In an attempt to determine if the interest in health occupations is genuine, that is, are the students interested in the health occupations or is the interest to take courses to fulfill science requirements, and to escape taking Biology, Chemistry, or Physics.

The majority of students surveyed had completed or were completing three years of science. This was followed by those having taken two years of science and one year of science (see table 6).

TABLE 6

Number of Science Courses Completed by Respondents			
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>
none	6.7	10.8	8.6
1	24.2	22.6	23.4
2	21.7	24.5	23.0
3	31.7	25.5	28.8
4	11.3	12.3	11.7
5	2.9	2.0	2.5
Unknown	1.7	2.5	2.0

In order to develop a curriculum that would be appealing to a variety of students, it is necessary to know if those students interested intend to go to a two year college, a four year college, or to seek employment after graduation from high school.

In general, most of the students surveyed intended to go on to a four year college followed by an interest to work after high school or were undecided (see table 7).

TABLE 7

Educational Goals			
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>
2 year college	12.9	8.3	10.8
4 year college	47.5	46.6	47.1
Business school	14.6	5.9	10.6
Technical school	4.6	14.2	9.0
Work	12.9	13.2	13.1
Undecided	7.5	11.8	9.5

The next question (Question 8) concerns student interest for a career in the pre-allied health professions, a career in an allied health profession, possibly either or not interested at all (see Table 8).

Twenty-three percent of the total students expressed interest in a program leading to a career in the pre-allied health professions. Twenty-five point nine percent of the total students expressed an interest in the option of further training for a career in an allied health profession (see table 8).

The results indicate that a need exists to offer a program which would appeal to many students; one which would probably initiate a student's planning process for a future career goal.

TABLE 8

Interest in Pre-allied Health			
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>
A career in a pre-allied health profession	21.3	12.3	23.2
A career in an allied health profession	22.5	29.9	25.9
Neither	37.1	35.8	36.5
Both sound interesting	4.2	5.4	4.7
undecided	15.0	16.7	15.8

The question immediately following is to determine if a pre-allied health program major would have been considered in the eleventh and twelfth grade had it been available (Question Ten). Thirty-four point six percent responded "Yes", and 63.7 percent "No" (see table 9).

TABLE 9

Interest in a Pre-allied Health Program				
Total Respondents				
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>	
Yes	39.6	28.9	34.7	
No	59.6	68.6	63.7	
Undecided	0.8	2.5	1.6	

Elective courses can be of advantage to students enrolled in different programs within a comprehensive high school. The courses considered elective fulfill the requirements for the health occupations program, and science at the secondary level, in addition to preparing students for professional secretarial positions within medical establishments.

When asked if there were an interest in elective courses such as medical terminology, anatomy, physiology (Question Eleven), the responses were 47 percent "Yes" and 52 percent "No" (see table 10).

TABLE 10

Interest in Elective Courses for Pre-allied Health			
Total Respondents			
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>
Yes	49.2	43.6	46.6
No	50.0	55.4	52.3
Undecided	0.8	1.0	0.9

The next question was to determine the interest in utilizing the health occupations program specifically to prepare for a future in a professional secretarial position within a medical facility.

Thirty-eight percent of the total students were interested in elective courses to obtain specific skills for professional secretarial positions. The results are more favorable for female respondents which was expected (see table 11).

TABLE 11

Interest in Learning Specific Secretarial Skills			
Total Respondents			
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>
Yes	48.8	26.0	38.3
No	50.8	72.6	60.8
Undecided	0.4	1.5	0.9

In regard to work-study related to allied health, it was expected that students would express an interest in working especially since working implies monetary remuneration. Regardless of whether the students would receive compensation for work study, it was surprising to see that only approximately fifty percent of students, male and female, would be interested in work study (see Table 12).

TABLE 12

Interest in Work Study for Pre-allied Health				
Total Respondents				
	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>	
Yes	49.6	43.1	46.6	
No	49.2	50.0	49.6	
Undecided	1.3	2.0	1.6	

Based on these results, there seems to be a need to motivate students to enter career training and to work. At this point, it seemed interesting to see how minority students responded to questions pertaining to the pre-allied health program (Questions Ten through Twelve).

So, the surveys were again disaggregated into minority males and minority females. Responses to

Questions Ten through Twelve were analyzed, and then the responses were analyzed for total minority.

When minority males were asked if they would have considered a pre-allied health program major in eleventh and twelfth grade (Question Ten), 45.5 percent responded "Yes" and 52 percent "No" (see table 13).

TABLE 13

Interest in a Pre-allied Health Program	
Minority Male Respondents	
	<u>% Minority Male</u>
Yes	45.5
No	52.0
Undecided	2.5

Compared to the percent of total students, percent female, and percent male, the minority males had an impressively positive response to an interest in a pre-allied health program. This is noteworthy, as traditionally, the majority of occupations in health care are seen as female roles (see Table 14).

TABLE 14

Comparatives for Interest in a Pre-allied Health Program
 Minority Male Respondents Versus Total Respondents

	<u>% Minority Males</u>	<u>% Females</u>	<u>% Males</u>	<u>% Total</u>
Yes	45.5	39.6	28.9	34.7
No	52.0	59.6	68.6	63.7
Undecided	2.5	0.8	2.5	1.6

As mentioned earlier, the benefits of elective courses are numerous. Minority males are extremely interested in elective course work such as medical terminology, anatomy, physiology (Question Eleven) with 57.2 percent "Yes" responses and 41.6 percent "No" responses (see table 15).

TABLE 15

Interest in Elective Courses for Pre-allied Health
 Minority Male Respondents

	<u>% Minority Male</u>
Yes	57.2
No	41.6
Undecided	1.3

Following the minority males for interest are the percent females with thirty-nine point six "Yes" responses (see Table 16).

TABLE 16

Comparatives for Interest in Elective Courses					
Minority Male Respodents Versus Total Respondents					
	<u>% Minority Male</u>	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>	
Yes	57.2	49.2	43.6	46.6	
No	41.6	50.0	55.4	52.3	
Undecided	1.3	0.8	1.0	0.9	

As an additional point of interest, the majority of minority respondents were in grade twelve followed by eleven as was with the total non-minority respondents (see Table 3). This indicates a need to begin career awareness at the sophmore year so that students entering grade eleven will have a sense of available careers and possible employment opportunities after high school.

When minority males were questioned as to interest in courses to obtain specific skills for professional secretarial positions (Question Twelve), 42.9 percent responded "Yes" and 55.8 percent "No" (see table 17).

TABLE 17

Interest in Learning Specific Secretarial Skills	
Minority Male Respondents	
	<u>% Minority Male</u>
Yes	42.9
No	55.8
Undecided	1.3

Overall, females were more interested in specific skills. but, minority males followed closely behind (see Table 18). Once again, this is encouraging, as this is more evidence that males and females alike are interested in a career education as professional secretaries. For years, occupational education has been seen as a program for males interested in electrical, woodworking, welding, and carpentry. Now, females are interested in a career education and males are interested in female orientated roles. This places a responsibility upon curriculum developers to prepare and offer programs to enhance a seeming interest in order to fulfill an educational and professional need.

TABLE 18

Comparative for Interest in Learning Specific
Secretarial Skills

Minority Male Respondents Versus Total Respondents

	<u>% Minority Males</u>	<u>% Females</u>	<u>% Males</u>	<u>% Total</u>
Yes	42.9	48.8.	26.0	38.3
No	55.8	50.8	72.6	60.8
Undecided	1.3	0.4	1.5	0.9

With regard to work study, males are expected to be most interested in work study. However, males in general were not as interested in work study (Question Thirteen) as were the minority males of which 57.1 percent expressed interest (see table 19).

TABLE 19

Interest in Work Study for Pre-allied Health

Minority Male Respondents

	<u>% Minority Male</u>
Yes	57.1
No	40.3
Undecided	2.6

Following the minority males for interest in work study are the females in general. The male respondents

were considerably less interested in work-study and this was disturbing (see Table 20).

TABLE 20

Interest in Work Study for Pre-allied Health				
Minority Male Respondents Versus Total Respondents				
	<u>% Minority Male</u>	<u>% Female</u>	<u>% Male</u>	<u>% Total</u>
Yes	57.1	49.6	43.1	46.6
No	40.3	49.2	50.0	49.6
Undecided	2.6	1.3	2.0	1.6

The results indicate that minority males are interested in a program leading to a career, elective courses and work-study related to allied health. These results were marked when compared to the results of the total students surveyed in Question Ten through Question Thirteen.

The minority females were then evaluated. When asked if they would have considered a pre-allied health program major in the eleventh and twelfth grade (Question Ten) the responses were 56 percent "Yes" and 42 percent "No" (see table 21).

TABLE 21

Interest in a Pre-allied Health Program	
Minority Female Respondents	
	<u>% Minority Female</u>
Yes	56.0
No	42.0
Undecided	1.0

An overall look at interest in a Pre-allied health program indicates that minority females expressed the most interest, followed by minority males, and then females in general. There is no doubt that the minority population would be addressed with a curriculum that provides for a career education in addition to a basic education (see Table 22).

TABLE 22

Interest in a Pre-allied Health Program					
Minority Respondents Versus Total Respondents					
	<u>% Minority Females</u>	<u>% Minority Males</u>	<u>% Females</u>	<u>% Males</u>	<u>% Total</u>
Yes	56.0	45.5	39.6	28.9	34.7
No	42.0	52.0	59.6	68.6	63.7
Undecided	1.0	2.5	0.8	2.5	1.6

Interest in elective courses such as medical terminology, anatomy, physiology (Question Eleven) resulted in 55 percent "Yes" and 44 percent "No" (see table 23).

TABLE 23

Interest in Elective Courses for Pre-allied Health Minority Female Respondents	
	<u>% Minority Female</u>
Yes	55.0
No	44.0
Undecided	1.0

When the responses to interest in elective courses was compared, minority males were most interested, followed by minority females, and then the females in general (see Table 24). This again is significant when recalling recommendations by various state departments of education, that were to address the needs of the minority, disadvantaged, and handicapped population.

TABLE 24

Interest in Elective Courses for Pre-allied Health
Minority Respondents Versus Total Respondents

	<u>% Minority Females</u>	<u>% Minority Males</u>	<u>% Females</u>	<u>% Males</u>	<u>% Total</u>
Yes	55.0	57.2	49.2	43.6	46.6
No	44.0	41.6	50.0	55.4	52.3
Undecided	1.0	1.3	0.8	1.0	0.9

When asked if interested in courses to obtain specific skills for professional secretarial positions (Question Twelve), 52 percent of the minority females responded "Yes" and 48 percent "No" (see table 25).

TABLE 25

Interest in Learning Specific Secretarial Skills
Minority Female Respondents

	<u>% Minority Female</u>
Yes	52.0
No	48.0
Undecided	0.0

When the overall responses were considered, the minority females were most interested in specific secretarial skills, followed by females, and then the minority males (see Table 26).

TABLE 26

Comparative for Interest in Learning Specific
Secretarial Skills

Minority Respondents Versus Total Respondents

	<u>% Minority Females</u>	<u>% Minority Males</u>	<u>% Females</u>	<u>% Males</u>	<u>% Total</u>
Yes	52.0	42.9	48.8	26.0	38.3
No	48.0	55.8	50.8	72.6	60.8
Undecided	0.0	1.3	0.4	1.5	0.9

The minority female response to work-study resulted in 52 percent interested in work-study related to allied health (Question Thirteen) and 42 percent not interested (see table 27).

TABLE 27

Interest in Work Study for Pre-allied Health

Minority Female Respondents

	<u>% Minority Female</u>
Yes	56.0
No	42.0
Undecided	2.0

When compared to other respondents, minority males were the most interested in work-study, followed by minority females, and females in general (see Table 28). Once again, it is disturbing to see that males in general

are not interested in work-study. This leads one to question if many of today's students are uninterested in working because educators promote academia and attending college. If this be the case, is this an injustice to the many adults of tomorrow who will never see a college acceptance and who really need career training at the secondary school level.

TABLE 28

Comparative for Interest in Work Study for Pre-allied Health					
Minority Respondents Versus Total Respondents					
	<u>% Minority Females</u>	<u>% Minority Males</u>	<u>% Females</u>	<u>% Males</u>	<u>% Total</u>
Yes	56.0	57.1	49.6	43.1	46.6
No	42.0	40.3	49.2	50.0	49.6
Undecided	2.0	2.6	1.3	2.0	1.6

These results were exceptionally interesting, the "yes" responses showed an unquestionable increase in Question Ten through Question Thirteen when compared to the total students surveyed. Minority females expressed more positive response than minority males when results were compared to interest in a pre-allied health program major and in elective courses to obtain specific skills for professional secretarial positions. The minority males were more interested in elective courses for the

sake of taking them and in work-study related to allied health.

These responses were somewhat expected as health care has traditionally been seen as a woman's occupation compared to medicine which always has been seen as a man's profession. These attitudes should slowly change with increased career awareness education at the secondary level, and as women begin to see themselves in more non-traditional roles. We already see this change to some degree in society as women have been accepted in fields where they were never seen at one time.

Overall, the total minority students surveyed were interested in a pre-allied health program major (Question Ten) with 51.4 percent (see table 29).

TABLE 29

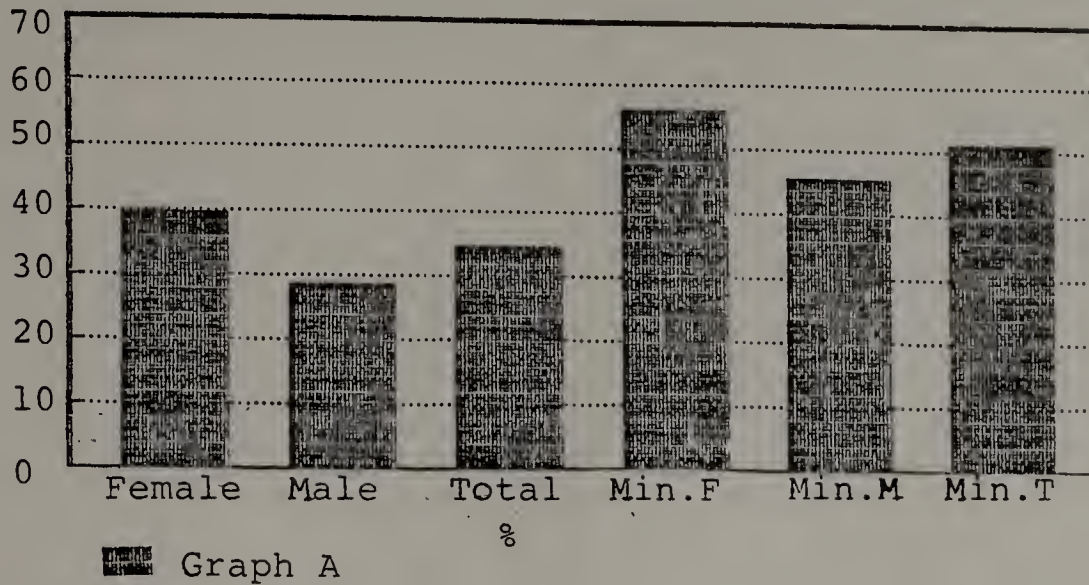
Interest in a Pre-allied Health Program	
Total Minority Respondents	
	<u>%</u> <u>Minority</u> <u>Total</u>
Yes	51.4
No	46.3
Undecided	1.7

These results were compared to the total students surveyed where 34.7 percent expressed an interest in a pre-allied health program major. Comparison between the

various groups of students is summarized in Table 30.

TABLE 30

Comparative Between Minority and Non-Minority Respondents
Interest in a Pre-allied Health Program



% Female = Female Respondents

% Male = Male Respondents

% Total = Total Respondents

% Min. F = Minority Female Respondents

% Min. M = Minority Male Respondents

% Min. T = Total Minority Respondents

Interest in elective courses such as medical terminology, anatomy, physiology (Question Eleven) resulted in a "Yes" response from 55.9 percent of the total minority students (see table 31).

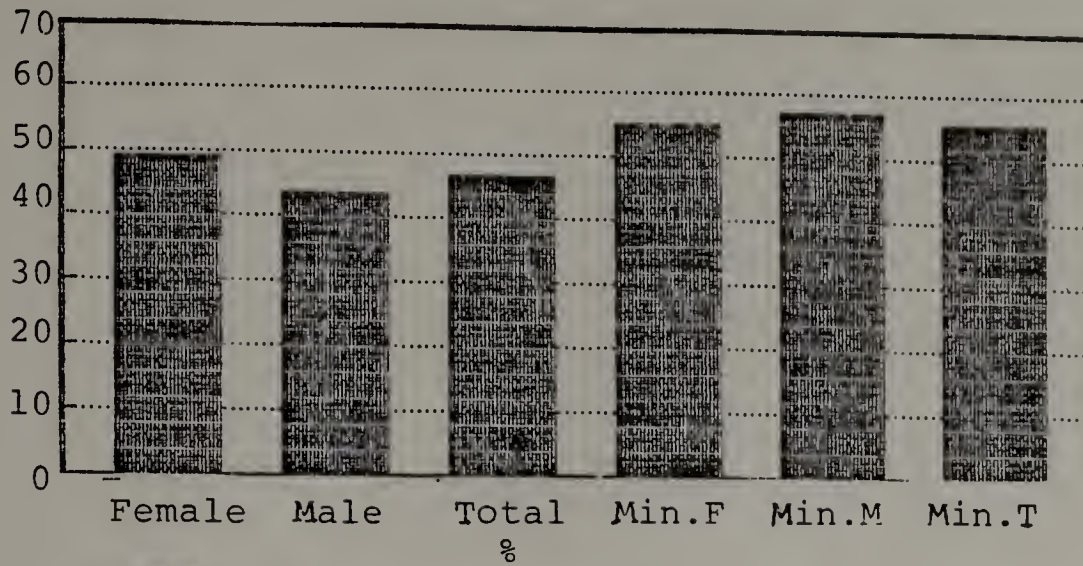
TABLE 31

Interest in Elective Courses for Pre-allied Health	
Total Minority Respondents	
	<u>%</u> <u>Minority</u> <u>Total</u>
Yes	55.9
No	42.9
Undecided	1.2

This was compared to the total students surveyed where 46.6 percent were interested. Further comparison between the various groups of students is summarized in Table 32.

TABLE 32

Comparative Between Minority and Non-Minority Respondents
Interest in Elective Courses for Pre-allied Health



Graph A

% Female = Female Respondents

% Male = Male Respondents

% Total = Total Respondents

% Min. F = Minority Female Respondents

% Min. M = Minority Male Respondents

% Min. T = Total Minority Respondents

When minority students were asked if they were interested in courses to obtain specific skills for professional secretarial positions (Question Twelve), 47.4 percent responded "Yes" (see table 33).

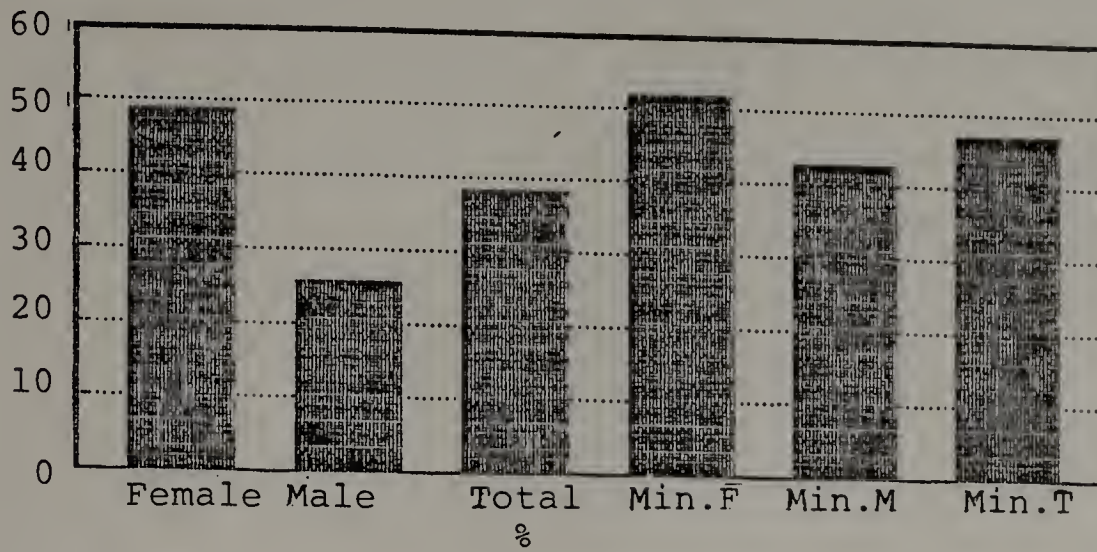
TABLE 33

Interest in Learning Specific Secretarial Skills	
Total Minority	
	<u>%</u> <u>Minority</u> <u>Total</u>
Yes	47.3
No	51.4
Undecided	1.3

This was compared to the total students surveyed where 38.3 percent responded as interested. The comparison between the different group of respondents is in Table 34.

TABLE 34

Comparative Between Minority and Non-Minority Respondents
Interest in Specific Secretarial Skills



Graph A

% Female = Female Respondents

% Male = Male Respondents

% Total = Total Respondents

% Min. F = Minority Female Respondents

% Min. M = Minority Male Respondents

% Min. T = Total Minority Respondents

The interest in work-study related to allied health (Question Thirteen) resulted in 56.5 percent of the total minority students expressing an interest (see table 35).

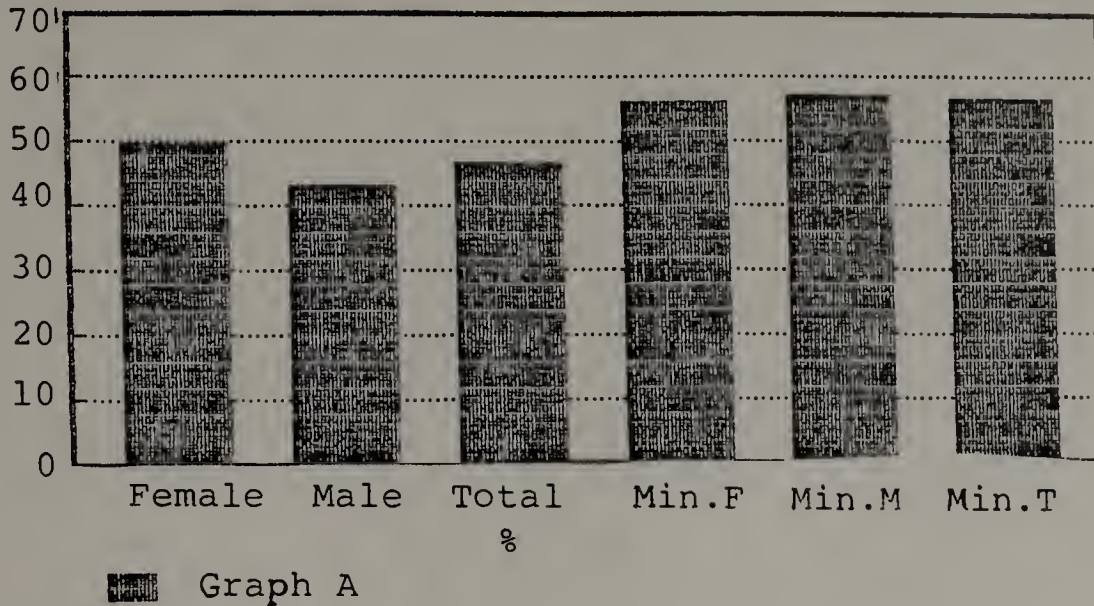
TABLE 35

Interest in Work Study for Pre-allied Health	
	Minority Total
	<u>% Minority Total</u>
Yes	56.5
No	41.2
Undecided	2.3

The total students surveyed resulted in 46.6 percent responses of interest in work-study compared to these results. These results were then compared to the other respondents and the results is summarized in Table 36.

TABLE 36

Comparative Between Minority and Non-Minority Respondents
Interest in Work Study for Pre-allied Health



% Female = Female respondents

% Male = Male Respondents

% Total = Total Respondents

% Min. F = Minority Female Respondents

% Min. M = Minority Male Respondents

% Min. T = Total Minority Respondents

It is obvious from this survey that the minority students as a whole showed a greater interest in a program which could potentially enhance their interest to pursue a career goal. Next was to determine if academic standing did in fact play a role in the choice between a positive or a negative response in Question Ten through Question Thirteen.

The same pattern of evaluation was followed using the four percentile groups for academic standing that was established (see page 52 of Chapter IV). Those students below the fifty-ninth percentile were not included.

When the total number of students surveyed were asked if they would have considered a pre-allied health program major in eleventh and twelfth grade (Question Ten), 34.7 percent were interested (refer to table 10). This was compared to males in the 100-90 percentile and the 69-60 percentile where the responses were similar with 33.3 percent and 35.4 percent interest, respectively. Percent interest for males decreased in the 89-80 percentile and the 79-70 percentile (see table 37).

TABLE 37

Interest in a Pre-allied Health Program			
Male Responses in Academic Percentile Groups			
<u>Percentiles-Male</u>	<u>% Yes</u>	<u>% No</u>	<u>% Undecided</u>
100-90	33.3	50.0	16.7
89-80	29.5	68.9	1.6
79-70	21.1	76.3	1.3
69-60	35.4	62.5	2.1

Females responded differently within the 100-90 percentile and the 89-80 percentile interested in a pre-allied health program major in eleventh and twelfth grade with 33.3 percent and 46.5 percent, respectively. Percent interest decreased in the last two percentile groups (see table 38).

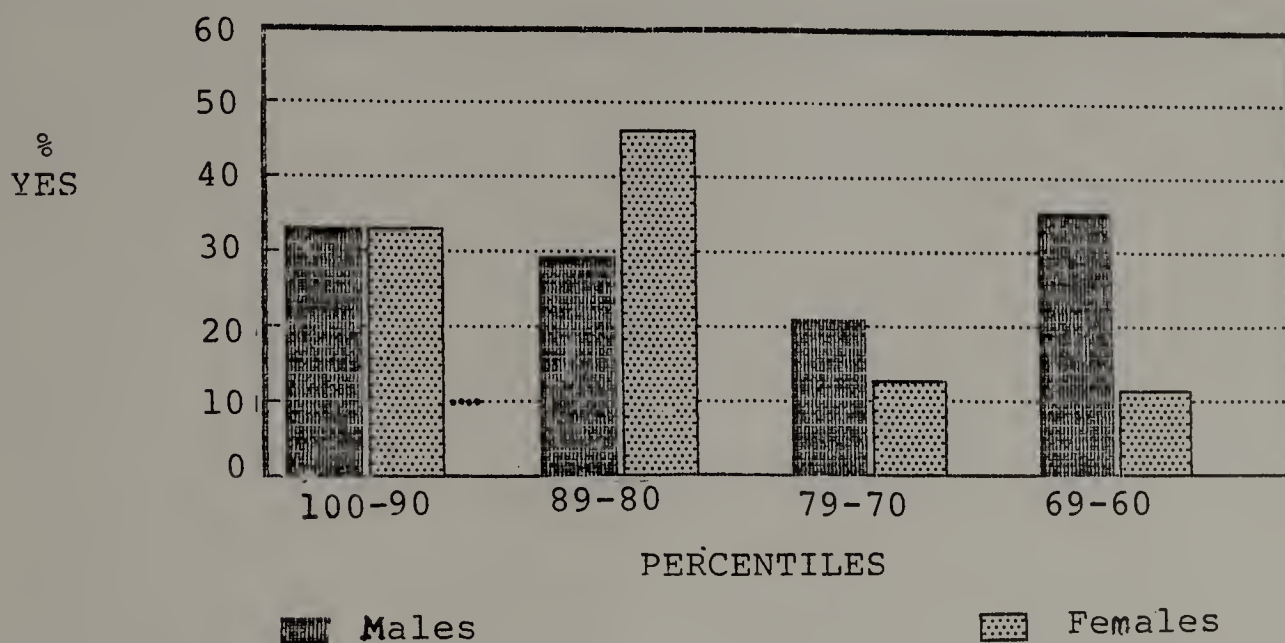
TABLE 38

Interest in a Pre-allied Health Program			
Female Responses in Academic Percentile Groups			
<u>Percentiles-Female</u>	<u>% Yes</u>	<u>% No</u>	<u>% Undecided</u>
100-90	33.3	66.7	0.0
89-80	46.5	52.5	1.0
79-70	12.8	56.4	0.0
69-60	11.5	84.6	3.9

Comparison of the percent "Yes" response between males and females in the four percentile groups is found in Table 39. The results clearly demonstrate a marked interest in a Pre-allied health for females in the 89-80 percentile group.

TABLE 39

Comparative Between Male and Female Responses in
Academic Percentile Groups
Interest in a Pre-allied Health Program



When the total number of students surveyed were asked if they were interested in elective courses such as medical terminology, anatomy, physiology (Question Eleven) 46.6 percent were interested (refer to table 11). These results are similar to males in the 100-90 percentile and the 89-80 percentile with 50 percent and 53.4 percent, respectively (see table 40).

TABLE 40

Interest in Elective Courses for Pre-allied Health
Male Responses in Academic Percentile Groups

<u>Percentiles-Male</u>	<u>% Yes</u>	<u>% No</u>	<u>% Undecided</u>
100-90	50.0	50.0	0.0
89-80	53.4	16.4	0.0
79-70	40.8	57.9	1.3
69-60	47.9	50.0	2.1

Females in the same percentile groups as the males responded with 66.7 percent and 77.8 percent interest, respectively (see table 41).

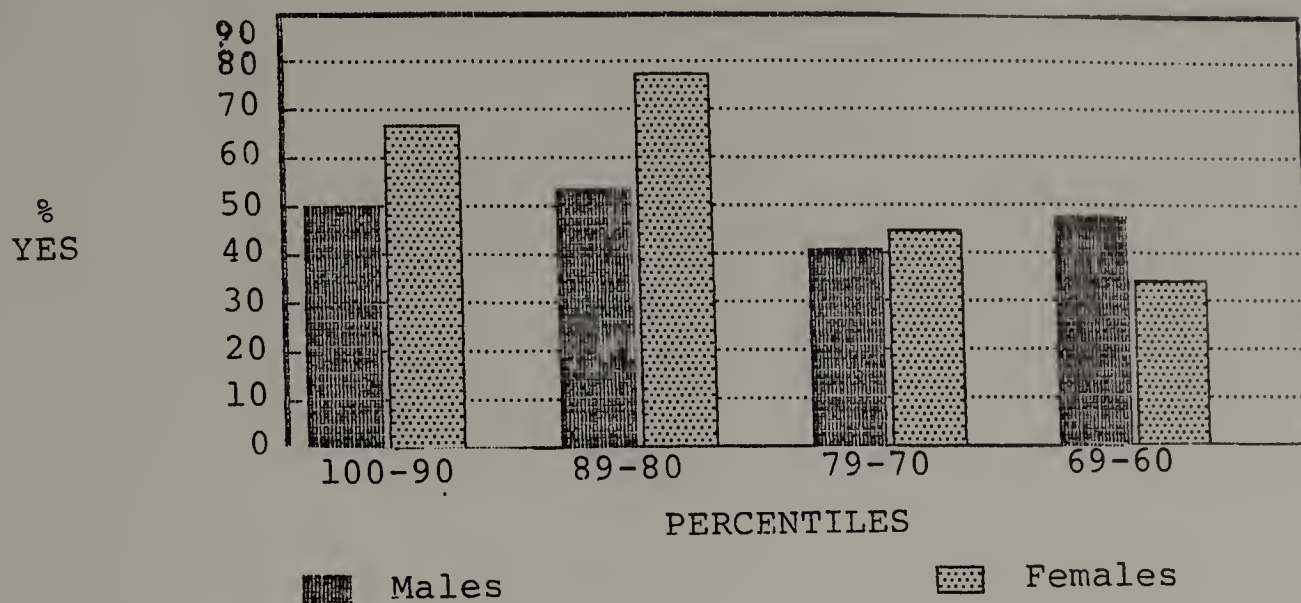
TABLE 41

Interest in Elective Courses for Pre-allied Health			
Female Responses in Academic Percentile Groups			
<u>Percentiles-Female</u>	<u>% Yes</u>	<u>% No</u>	<u>% Undecided</u>
100-90	66.7	29.2	4.2
89-80	77.8	21.2	1.0
79-70	44.9	55.1	0.0
69-60	34.6	65.4	0.0

It is clear that elective courses appealed to females in the 100-90 percentile and the 89-80 percentile, followed by males in the same percentile groups. Note the comparisons in Table 42.

TABLE 42

Comparative Between Male and Female Responses in
 Academic Percentile Groups
 Interest in Electives Courses for Pre-allied Health



When asked if these courses would be of interest to obtain specific skills for professional secretarial positions (Question Twelve), males in the 69-60 percentile were interested with 37.5 percent. There was a steady decline of interest with an increase in academic ability (see table 43).

TABLE 43

 Interest in Learning Specific Secretarial Skills

Male Responses in Academic Percentile Groups

<u>Percentiles-Male</u>	<u>% Yes</u>	<u>% No</u>	<u>% Undecided</u>
100-90	16.7	83.3	0.0
89-80	21.3	78.7	0.0
79-70	26.3	59.2	1.3
69-60	37.5	58.3	4.2

Females in the 89-80 percentile were most interested in obtaining specific skills for professional secretarial positions with 77.8 percent followed by the 69-60 percentile with 53.9 percent interest (see table 44).

TABLE 44

 Interest in Learning Specific Secretarial Skills

Female Responses in Academic Percentile Groups

<u>Percentiles-Female</u>	<u>% Yes</u>	<u>% No</u>	<u>% Undecided</u>
100-90	37.5	62.5	0.0
89-80	77.8	22.2	1.0
79-70	44.9	55.1	0.0
69-60	53.9	46.2	0.0

These percentages indicate that females in the 89-80 percentile were most interested in a pre-allied health program major, followed by minority females (refer to

table 21), total minorities (refer to table 29), and minority males (refer to table 31).

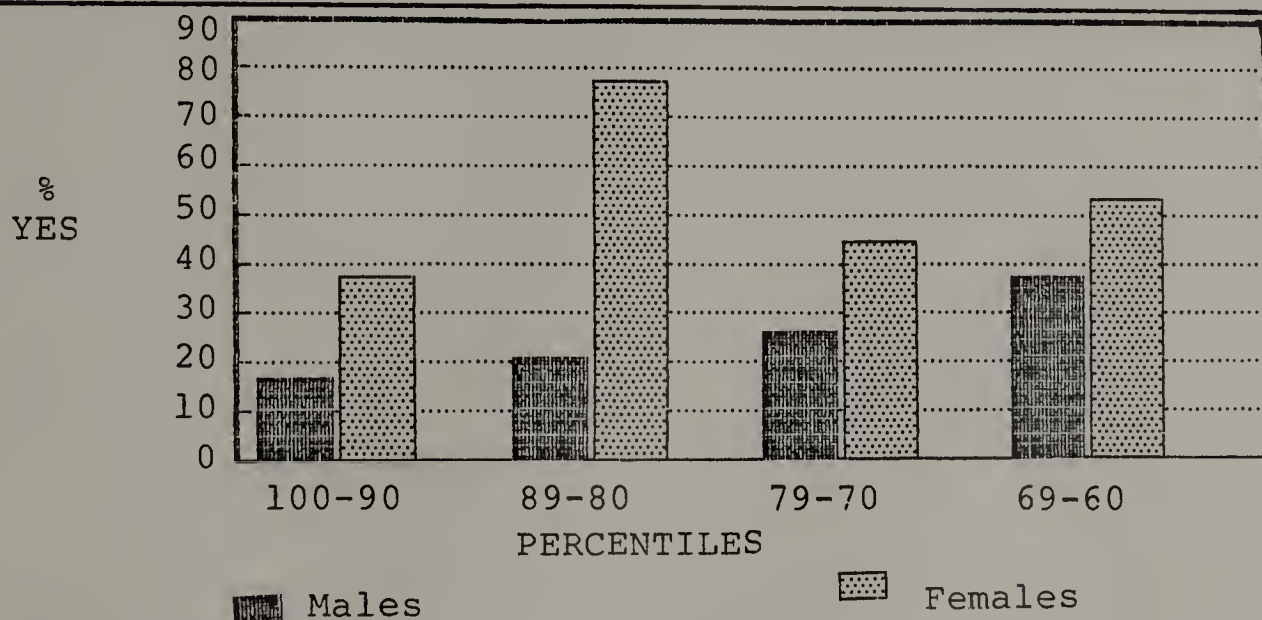
The elective courses were of interest to both males and females in the 100-90 percentile and the 89-80 percentile (see Table 45) along with minority males (refer to table 15), minority females (refer to table 23), and total minorities (refer to table 31).

Concerning interest in obtaining specific skills for professional secretarial positions, females in the 89-80 percentile expressed considerable interest followed by females in the 69-60 percentile, minority females (refer to table 25), and total minorities (refer to table 33).

TABLE 45

Comparative Between Male and Female Responses in
Academic Percentile Groups

Interest in Specific Secretarial Skills



Work-study related to allied health (Question Thirteen) was of interest to males in the 100-90 percentile and the 69-60 percentile with 66.7 percent and 52.1 percent, respectively (see table 46).

TABLE 46

Interest in Work Study for Pre-allied Health			
Male Responses in Academic Percentile Groups			
<u>Percentiles-Male</u>	<u>% Yes</u>	<u>% No</u>	<u>% Undecided</u>
100-90	66.7	33.3	0.0
89-80	34.4	65.6	0.0
79-70	39.5	57.9	2.6
69-60	52.1	43.8	4.2

Females interested in work-study were in the 79-70 percentile and the 89-80 percentile with 56.4 percent and 53.3 percent, respectively (see table 47).

TABLE 47

Interest in Work Study for Pre-allied Health			
Female Responses in Academic Percentile Groups			
<u>Percentiles-Female</u>	<u>% Yes</u>	<u>% No</u>	<u>% Undecided</u>
100-90	33.3	62.5	4.2
89-80	53.5	45.5	1.0
79-70	56.4	42.3	1.3
69-60	38.5	61.5	0.0

These results indicate that males in the 100-90 percentile were most interested in work-study related to allied health, followed by interest on the part of students among the minority females (refer to table 19), total minorities (refer to table 35), females in the 79-70 percentile (refer to table 47), and minority females (refer to table 27).

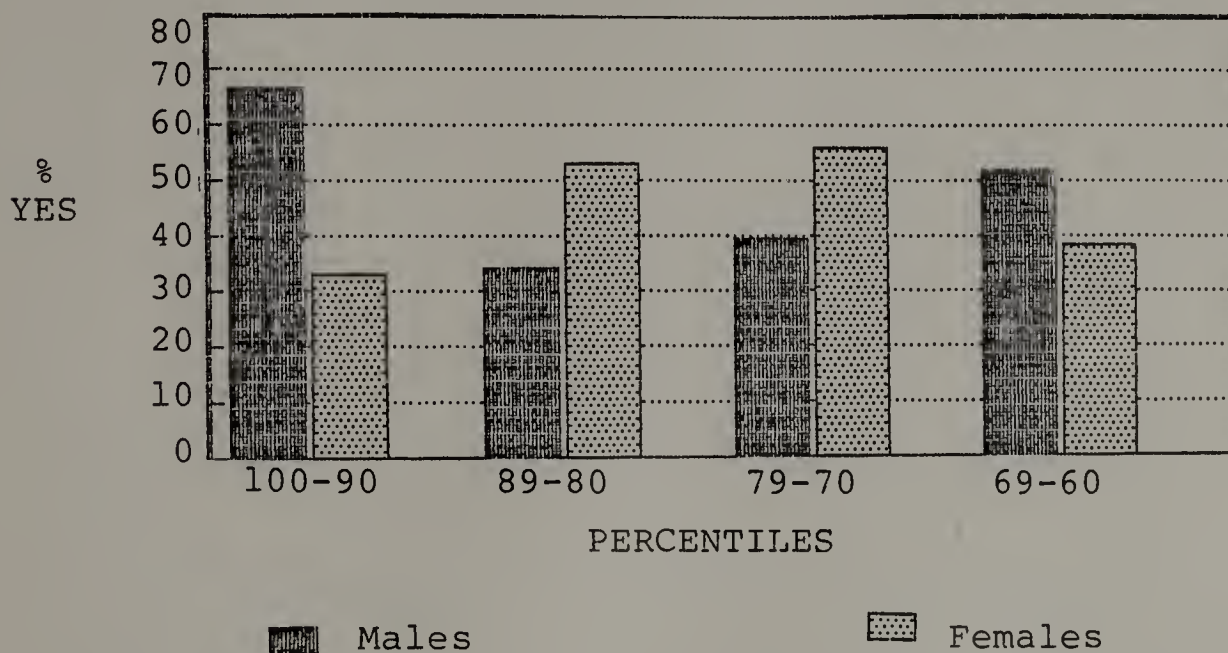
Comparison between male and female "Yes" responses for the percentile groups is summarized in Table 48.

TABLE 48

Comparative Between Male and Female Responses in

Academic Percentile Groups

Interest in Work Study for Pre-allied Health



Survey results demonstrate that a curriculum developed to meet the needs of males and females, both minority and non-minority, most probably would be quite successful in this specific high school as well as in similar urban secondary schools. Additionally, the curriculum would have to be tailored to meet the needs of the middle percentile groups and the upper percentile groups while leaving the option for the lower percentile groups to take courses as learning experiences and for science credit.

Therefore the proposed curriculum within this study takes into account the specific needs for a pre-allied health or health occupations education program as well as the incorporation of basic skills in a remedial method. Once again the curriculum is basic and is appropriate for an urban secondary school. Once a school system or school district chooses to implement the pre-allied health program major specific problems can be addressed through the initial discussions of particular goals and objectives identified by the educators and administrators involved in occupational education.

Therefore, this curriculum can serve as a guide for pre-allied health career education and as a impetus to implement career education programs in the area of health occupations education.

CHAPTER V

Rationale and Conceptual Focus of the Curriculum

Currently, many secondary schools offer increased academics as well as vocational education with career training in health occupations. Within comprehensive high schools, one result has been the development of curricula in which a concerted effort has been made to reinforce basic skills, interface required courses within specific areas where graduation requirements have been increased, (i.e., the areas of science and mathematics), and to synchronize the basic academic curricula with career education training. This chapter presents the rationale, and the conceptual focus of the curriculum. In addition, the program objectives are outlined, and activities are suggested in order to actualize the objectives of this pre-allied health program. Pre and post-testing is discussed, and suggested are methods to accomplish a valid and beneficial evaluation of students, presentation of the materials, instructors, and the overall program.

This curriculum is a model program and a guide to be utilized in comprehensive urban secondary schools. Its scope is grade ten through twelve, inclusive, and is geared toward career education; however, it does not limit the emphasis on basic academics. If a student

chooses to enter the program and later decides that it is not where he or she should be, for whatever reason, withdrawal from the program will not cause any major problems. All that would be required is a schedule readjustment for the individual completed by the guidance counselor.

The ability to readily solve such a situation is due to the fact that this program will cause no disruption to the traditional time frames within which comprehensive secondary schools function. Basically, the need to allot block time on weekly, biweekly or triweekly rotating basis (as is done in traditional vocational-technical schools) will not be necessary; therefore, it will not place undue demands on the scheduling process nor on an individual student's schedule.

The curriculum will provide a solid basic foundation in science with emphasis on basic skills. Additionally, the curriculum will focus upon topics which must be covered in a pre-allied health program predicated upon the skills necessary for entry-level positions in the health occupations.

The rationale for such a program is supported by the general concensus of persons presently involved in the health occupations and analysis of the curriculum material presently available and being utilized.

Research and interviews have led to the conclusion

that there is much available in the way of curriculum materials for the health occupations but none of which offers a conclusive, concise, and a constructive program leading to a career at the entry level. Also, these programs do not convincingly provide the basic foundation needed to allow for growth in more advanced employment training or education for an allied health profession. Additionally, many of the available programs are not adaptable to all comprehensive secondary schools, especially when scheduling variations are taken into consideration.

In this proposed program, a student will not be locked in nor will a student leaving the program lose time. All courses offered in the program will fulfill science requirements and also be beneficial for business students interested in becoming professional secretaries or receptionists in health care facilities or medical/dental offices. Further, some course work such as medical terminology, care of a sick patient, and anatomy and physiology will be valuable because of the application to everyday life.

In order to evaluate the program's effectiveness and individual students progress, pre- and post-testing will be administered each semester of study with the exception of the initial career awareness semester. A pre-test

analysis scale will be devised in order to determine individual student and class mean averages. Any student who is below the class mean will be advised of the situation and referred to guidance for alternate study plans. With regard to the program assessment, pre- and post-test data will be used diagnostically and prescriptively to indicate both effectiveness of the instructional method as a measure of learning and the expectations for each semester of course work. The latter prescriptive information can be utilized to modify the course work in order to suit and accommodate the cross-sections of students without forfeiting or compromising the objectives. All recommendations for change will be evaluated and, are implemented, should be viewed as measures to ensure the growth and maintenance of an academic/career orientated program with the particular comprehensive secondary school in mind.

The suggested format of this curriculum fits into a time frame that commences in the first quarter of the sophomore year and ends in the fourth quarter of the senior year (see Table 49).

TABLE 49

 Time Frame for the Pre-allied Health Curriculum

	<u>Semester 1</u>		<u>Semester 2</u>	
	<u>Quarter 1</u>	<u>Quarter 2</u>	<u>Quarter 1</u>	<u>Quarter 2</u>
Year 1	Career Awareness	Career Awareness	Introduction to Pre-allied Health	Introduction to Pre-allied Health
Year 2	Anatomy & Physiology	Anatomy & Physiology	Anatomy & Physiology	Anatomy & Physiology
Year 3	Advanced Pre-allied Health	Advanced Pre-allied Health	Advanced Pre-allied Health	Field Work

Program Objectives

CAREER AWARENESS

Sophomore Year - Semester 1 - Quarter 1 and 2

The student will be:

1. introduced to the health occupations;
2. familiarized with the occupations and the specific duties;
3. made aware of various age groups with which one may be working;
4. encouraged to strive toward a career education;
5. made aware of all job opportunities, and general employer expectations for specific occupations will be discussed.

Activities will include:

1. research into various occupations;
2. use of computerized listings of occupations; expected hours and days of work, average salary, education and skills required;
3. guest speakers in the health occupations;
4. field trips to health care facilities.

INTRODUCTION TO PRE-ALLIED HEALTH

Sophomore Year - Semester 2 - Quarter 3 and 4

In order to introduce students to the language of medical science, prefixes, suffixes, root words, and to become familiar with vocabulary,

Activities will include:

1. memorizing prefixes and suffixes;
2. identifying root words;
3. memorizing vocabulary and definitions;
4. practice readings;
5. translating an article written medical and scientific publications;
6. pre and post-testing.

In order to introduce students to computers in medicine, how computers are utilized in health care facilities, and the use of computers in diagnostics,

Activities will include:

1. practice with computer terminals, input and output;
2. field trip to health care facilities to tour ambulatory care, emergency services, laboratory control and to observe how computers can expedite basic procedures.

Aseptic techniques necessary to control the spread

of infection and how to work under aseptic conditions will include the following activities:

1. how to clean and dress a wound;
2. how to handle blood, urine and excretions from a patient with a contagious disease;
3. how to sterilize equipment in an autoclave;
4. the use of sterile gowns, gloves and instruments;
5. how to dispense of contaminated articles and clothing;
6. how to discard plates and test tubes used for microbiologic studies;
7. field trips to health care facilities such as chemistry laboratories, microbiological laboratories, isolation units, patient rooms, intensive care units, cardiac care units, operating room areas and nurseries.

The care of a sick patient including how to clean, dress, feed and change the linens will be addressed through such activities as:

1. bathing a patient;
2. dressing a patient - changing gowns;
3. how to roll a patient over and change the linens;
4. how to make a person as comfortable as possible;
5. how to feed an ill person;
6. helping a person use a commode or a bed pan;

7. taking temperature, blood pressure and pulse;
8. how to give an enema;
9. walking a person with an intravenous line, catheter or drainage tube in place;
10. care of a sick patient and maintaining their personal pride.

The care of a handicapped patient, e.g., a patient confined to a wheel chair, using a walker, wearing leg or back braces and in traction will be addressed through activities such as :

1. practicing getting a person (using dead weight) out of bed and to and from a wheel chair;
2. learning how to use a walker so as to help others learn;
3. caring for blind and visually handicapped;
4. caring for audibly impaired and deaf persons;
5. developing empathy for the handicapped but not pity so that the student can learn to be of help and not a hindrance in aiding the handicapped.

The care of a person who has lost extremities

Activities include:

1. discussion of situations that can result in the loss of limbs or other extremities;
2. guest speakers from spinal cord injury centers;
3. guest speakers from the field of orthopedics.

ANATOMY & PHYSIOLOGY

Junior year - Semester 1 and 2 - Quarters 1, 2, 3, and 4

The student will:

1. learn the basic theory of cell structure and the cellular level of organization;
2. study, recognize, and visually identify the body structure and organs;
3. study the human body and gain insight into the functions, how they coordinate and assist each other and how systems rely upon each other in order to maintain a healthy functioning individual;
4. compare organisms from various classifications;
5. dissection (a cat will be dissected while its body structure and organs are compared to those of the human body);
6. study cell structure both plant and animal through the use of a microscope;
7. learn about physiology and carry out experiments in the laboratory pertaining to human body functions;
8. become familiar with tests utilized to determine malfunctioning body organs while both normal and abnormal results are discussed;

The principles of human physiology will be explored through such activities as

1. memorization of skeletal system -axial and articulate;
2. memorization of the muscular system and how the nervous system coordinates the skeletal and muscular systems;
3. examination of the systemic circulation and its pathways with emphasis on hepatic, renal and pulmonary circulation;
4. the study of the lymphatics, its functions and correlation with the circulatory system;
5. discussion and study of the respiratory system - ventilation and exhalation - with attention to respiration at the cellular level;
6. examination of the nervous system - the brain as the message center of the body and the manner in which various branches of the nervous system are actually one major control system;
7. learning about nerve cells (neurons) and their inability to reproduce and repair in an attempt to help to understand brain damage and paralysis;
8. study of the exocrine and endocrine glands with emphasis on the body's response to endocrine hormones and illness attributed to malfunction

- of the glands;
9. study of the digestive tract and the pathway of food with emphasis on malfunction, disorders and the effects of stress on this system;
 10. examination of the urogenital system - how the body rids itself of wastes- the reproductive system including the study of sex cells, fertilization, pregnancy, and the role of hormones on male and female reproductive systems;
 11. field trips to local health facilities.

All activities will integrate lecture and laboratory so that the students will gain a better understanding of where an organ is located in the body, how it functions, and how organs functioning together maintain an organ system.

ADVANCED PRE-ALLIED HEALTH

Senior Year - Semester 1 and 2 - Quarters 1, 2, and 3

Clinical chemistry

In order to introduce students to basic clinical chemistry, and to gain familiarity with medical testing, activities will include:

1. how routine blood and urine tests are performed;
2. how specimens are collected;
3. interpretation of results and how this kind of information aids a clinician in solving medical problems;
4. how blood and tissue typing relate to the immune system (antibodies versus antigens);
5. transplants, tissue rejection, and transfusions - discussion to include risks.

Nutrition

In order to gain a better understanding of our nutrient and caloric needs for the maintenance of basal body temperature and normal body functioning, activities will include:

1. explanation of the differentiation between warm-blooded and cold-blooded organisms;
2. assessment of the six essential nutrients including where they are found, how they gain

- entrance into the body, and whether or not we are eating properly;
3. discussion of supplemental vitamins and minerals versus megadoses;
 4. examination of calories and dieting - diets with all the essentials versus a "crash diet";
 5. definition of diabetes mellitus;
 6. regulating a diabetic diet;

Microbiology

In order to gain an insight into the many pathogens which exist, and how infections can be prevented, controlled and/or cured.

Activities will include:

1. sterile techniques in microbiology;
2. use of the autoclave in microbiology;
3. the use of culture media, streaking plates and incubating materials to be tested;
4. the proper handling and disposal of contaminated materials;
5. the recognition gram-positive and gram-negative bacteria on prepared slides;
6. antibiotic therapy - the mode of action on bacteria - effects on the human body - resistant bacteria;

7. the study of viruses - how they reproduce - why viruses do not respond to antibiotics - the bacteria-like virus mycoplasma.

Psychology

In order to heighten students' awareness of how the psyche affects the human body and its functions to help the chronically ill patient cope with the reality of their illness,

Activities will include:

1. textbook readings, role-playing, and discussions to promote a better understanding of the human mind;
2. the identification of feelings, reactions, and the steps toward acceptance;
3. presentations by guest speakers - psychiatric and medical social workers.

FIELD WORK

Senior Year - Semester 2 - Quarter 4

In order to give students the opportunity to work in an area of interest, and to relate to both employees and patients in a health care environment,

Activities will include:

1. block time where students will work and or train

as nurse assistants, laboratory assistants,
x-ray assistants, etc.;

2. one period per week devoted to discussing what was learned and experienced during the time spent in the health care facility;
3. the opportunity to ask questions and to work on securing gainful employment for entry level positions after completing high school.

Pre- and Post-Testing

Measuring student knowledge before, during and after teaching is important in order to determine what the student knows, what the student has learned and if the materials had been presented in an efficient manner conducive to learning.

Tests that evaluate what students know or can do, given the conditions, performance, and standards stated in the objectives), are criterion-references tests. Examples of situations in which pre-tests and post-tests could be used effectively in teaching health occupation programs are:

1. before and after a field trip to a hospital;
2. before and after class presentations in the field of public health;
3. before and after the teaching of series on medical, dental and nursing occupations;
4. before or after the teaching of an entire health occupations program.

Pre-tests can serve diagnostic and prescriptive purposes, such as providing an overview of what will be covered and what the student will be expected to learn upon conclusion of a semester of study. By comparing the pre-test results with those of the post-test, students and teachers learn which skills have been mastered and what

information has been retained. Through the evaluation of the pre-test and post-test results, remediation activities can be revised, and successful teaching strategies can be identified. (66)

CHAPTER VI

Conclusion and Recommendations

Today, as a result of medical knowledge and practices, there is an extension of life with no guarantee of quality of life. Elderly and young alike become ill through injury or natural causes, and they are living longer than would have been expected twenty to thirty years ago. This has caused a rather demanding need for health occupations personnel, not all of whom need be college graduates or post-graduates.

The curriculum in this study is based upon findings from two ERIC searches (current available curriculum materials in health occupations and career awareness in health occupations), personal interviews, phone interviews with health care administrators, administrators of health occupations at the secondary level and the state level, health occupations educators and a student survey to determine interest and need (see Appendix A). After an expressed need was identified, steps were taken to develop the curriculum and to ensure its interfacing with academics, career preparation, and field-based work experience.

The course work fulfills science requirements at the secondary level in light of the present national trend to

increase science requirements in all systems. The model guide curriculum in health occupations is for use at the secondary level. Each school district interested in implementing the program can specifically tailor the curriculum to suit their scheduling needs as well as to accommodate the local hospital facilities where students will do their work.

The curriculum is designed to commence in the first quarter of the sophomore year (year one of the program), and continues through the last quarter of the senior year (year three of the program).

The curriculum includes course goals and learner-outcome programs. It is geared at the intermediate level using unit names and with the suggestions of publishers and materials to be utilized (see Appendix C).

Since the curriculum represents a balance between and among academics, career preparation, student, industrial, and health-care-facility job-skill requirements, it is structured to advocate a particular instructional approach.

Overall, the method throughout this curriculum will be lectures on various topics supported by textbook, supplemental materials, and laboratory work. The laboratory work will expose students to the routine clinical tests which are associated with keeping a check on

various systems of the body. Exposure to routine testing and interpretation of some of the less complicated testing will be of use in the students' senior year when they are expected to complete field work within a health care facility.

Specific areas of focus throughout the program will be career awareness and opportunities in the health occupations, medical terminology, computers in medicine, aseptic techniques, care of a sick patient, care of a handicapped patient, anatomy and physiology, clinical chemistry, nutrition, microbiology and psychology which will encompass aging, chronic illness, terminal illness, death, etc.

The methodology has been well researched and developed; at all times the input from educators presently involved in dealing with career education was incorporated. At no time is the academic flow in a comprehensive high school disrupted nor does the career training segment become so demanding as to take time away from academic studies.

It would be fitting for this curriculum to be implemented in the comprehensive urban secondary school where the survey was administered. At present, this is being discussed with the administrators from the system, as well as the possibility of offering segments of this

program in conjunction with a neighboring community college.

RECOMMENDATION I: A general recommendation to school administrators is to initiate contact with the industry in the area of the school district. It is necessary at all times to remain in close contact to ensure that the area will not be flooded with health care personnel and to ensure employment for students who graduate from high school.

RECOMMENDATION II: The Massachusetts State Department of Education and the Division of Vocational Education will be contacted so that this study can be reviewed. It will be of interest to see if the findings of this study are consistent with those of both the State Department of Education and the Division of Vocational Education.

RECOMMENDATION III: Hopefully this study will spur the interest of others interested in curriculum development. It would be of value to replicate this study within other urban areas, administering and analyzing results from the student needs survey, interviewing educational administrators, and administrators from local health care facilities.

RECOMMENDATION IV: This study not only presents a program, but, the general method of investigation utilized for health occupations can prove valuable in determining

the need for a career education/academic program in various areas. It is of hope that this study successfully advocates the need for career training at the secondary level not limited to the health occupations.

Certainly, it is stressed that the only way to be instrumental in implementing any new program is to present to state departments of education the invariable evidence of need from four main areas: 1) population demographics 2) administrators in health care and industry 3) educators and administrators and 4) students.

The health care field is an area where technology, medicine, and human services are linked together. The field offers career opportunities which can lead to gainful employment and financial security while providing a worthwhile service.

With this in mind, orientation of students toward a career education is the direction of the future. It is the responsibility of administrators and educators to prepare our youth by providing valuable educational experiences in order to foster self-esteem and a desire for a quality life.

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APPENDIX A

STUDENTS NEEDS ANALYSIS

SURVEY FOR STUDENT NEEDS ANALYSIS

A plan is presently underway to develop a pre-allied health program major curriculum for urban secondary schools. This program would offer students in the eleventh and twelfth grades a career opportunity after high school.

The pre-allied health fields include professions such as medical, dental or laboratory assistants. In addition, students would have the option of continuing to train for occupations that require certification and/or a degree. Such professions include medical technologists, medical technicians, x-ray, ultrasound and nuclear medicine technicians.

This survey is to determine interest as well as a need to offer such a program. Responses will be very useful and much appreciated.

Thank you

Ethnic Codes

- | | |
|-------------------|--------------------------------|
| 1 American Indian | 4 Black of Hispanic origin |
| 2 Black | 5 White of Hispanic origin |
| 3 Asian | 6 White not of Hispanic origin |

Survey

1. Male or Female
2. Ethnic background (see codes)
3. Age
4. Grade in School
5. Which house are you in 1) A,B,C,D 2) Fundamental
3) Pilot 4) Occupational Education
6. Average (last quarter) 1) 100-90 2) 89-80 3) 79-70
4) 69-60 5) below 59
7. How many science courses taken including this year?
8. Are you planning to go to 1) 2-year college 2) 4-
year college 3) business school 4) technical school
5) work after high school
9. Would you be interested in a program leading to 1) a
career in the pre-allied health professions 2) the
option of further training for a career in an allied
health profession
10. Would you have considered a pre-allied health program
major in eleventh and twelfth grades?
11. Would you be interested in elective courses such as
medical terminology, anatomy or physiology?
12. Would you be interested in the courses above to
obtain specific skills for professional secretarial
positions such as medical or dental secretary?
13. Would you be interested in work-study related to
allied health in eleventh or twelfth grade?
14. COMMENTS:

APPENDIX B

CURRICULUM

SOPHMORE YEAR SEMESTER 1

- CAREER AWARENESS - Quarter 1 and 2
- 2 days per week
(two hours)
 - 2 credits

Program Objectives

The student will be:

1. introduced to the health occupations;
2. familiarized with the occupations and the specific duties;
3. made aware of various age groups with which one may be working;
4. encouraged to strive toward a career education;
5. made aware of all job opportunities, and general employer expectations for specific occupations will be discussed.

Activities will include:

1. research into various occupations;
2. use of computerized listings of occupations; expected hours and days of work, average salary, education and skills required;
3. guest speakers in the health occupations;

4. field trips to health care facilities.

Course Content

Employment opportunities will be explored with a focus upon the educational needs as well as training to gain successful employment in the field.

Average work hours and days per week for specific positions will be made available as well as expected working conditions for certain positions.

The average age that one can be expected to be caring for or working with will be discussed such as pediatric patients, young adults, adults or geriatrics.

Tasks to be accomplished as well as expectations of an employee, in general, in a particular health occupation will be discussed as well as career opportunities as far as growth within a specific area of health occupations is concerned.

INTRODUCTION TO PRE-ALLIED HEALTH - Quarter 3 and 4

- 5 days per week
(five hours)

- 5 credits

Program Objectives

In order to introduce students to the language of medical science, prefixes, suffixes, root words, and to become familiar with vocabulary,

Activities will include:

1. memorizing prefixes and suffixes;
2. identifying root words;
3. memorizing vocabulary and definitions;
4. practice readings;
5. translating an article written medical and scientific publications;
6. pre and post-testing.

In order to introduce students to computers in medicine, how computers are utilized in health care facilities, and the use of computers in diagnostics,

Activities will include:

1. practice with computer terminals, input and output;
2. field trip to health care facilities to tour ambulatory care, emergency services, laboratory control and to observe how computers can expedite

basic procedures.

Aseptic techniques necessary to control the spread of infection and how to work under aseptic conditions will include the following activities:

1. how to clean and dress a wound;
2. how to handle blood, urine and excretions from a patient with a contagious disease;
3. how to sterilize equipment in an autoclave;
4. the use of sterile gowns, gloves and instruments;
5. how to dispose of contaminated articles and clothing;
6. how to discard plates and test tubes used for microbiologic studies;
7. field trips to health care facilities such as chemistry laboratories, microbiological laboratories, isolation units, patient rooms, intensive care units, cardiac care units, operating room areas and nurseries.

The care of a sick patient including how to clean, dress, feed and change the linens will be addressed through such activities as:

1. bathing a patient;
2. dressing a patient - changing gowns;
3. how to roll a patient over and change the linens;
4. how to make a person as comfortable as possible;

5. how to feed an ill person;
6. helping a person use a commode or a bed pan;
7. taking temperature, blood pressure and pulse;
8. how to give an enema;
9. walking a person with an intravenous line, catheter or drainage tube in place;
10. care of a sick patient and maintaining their personal pride.

The care of a handicapped patient, e.g., a patient confined to a wheel chair, using a walker, wearing leg or back braces and in traction will be addressed through activities such as :

1. practicing getting a person (using dead weight) out of bed and to and from a wheel chair;
2. learning how to use a walker so as to help others learn;
3. caring for blind and visually handicapped;
4. caring for audibly impaired and deaf persons;
5. developing empathy for the handicapped but not pity so that the student can learn to be of help and not a hindrance in aiding the handicapped.

The care of a person who has lost extremities

Activities include:

1. discussion of situations that can result in the loss of limbs or other extremities;

2. guest speakers from spinal cord injury centers;
3. guest speakers from the field of orthopedics.

Course Content

Medical terminology

Use of computers in medicine

Aseptic techniques

Care of a sick patient

Care of a handicapped individual

JUNIOR YEAR SEMESTER 1 and 2

- ANATOMY and PHYSIOLOGY - Quarter 1, 2, 3, and 4
- 5 days per week
(five hours)
 - 10 credits
 - prerequisite biology

Program Objectives

The student will:

1. learn the basic theory of cell structure and the cellular level of organization;
2. study, recognize, and visually identify the body structure and organs;
3. study the human body and gain insight into the functions, how they coordinate and assist each other and how systems rely upon each other in order to maintain a healthy functioning individual;
4. compare organisms from various classifications;
5. dissection (a cat will be dissected while its body structure and organs are compared to those of the human body);
6. study cell structure both plant and animal through the use of a microscope;
7. learn about physiology and carry out experiments in the laboratory pertaining to human body

functions;

8. become familiar with tests utilized to determine malfunctioning body organs while both normal and abnormal results are discussed;

The principles of human physiology will be explored through such activities as

1. memorization of skeletal system -axial and articulate;
2. memorization of the muscular system and how the nervous system coordinates the skeletal and muscular systems;
3. examination of the systemic circulation and its pathways with emphasis on hepatic, renal and pulmonary circulation;
4. the study of the lymphatics, its functions and correlation with the circulatory system;
5. discussion and study of the respiratory system - ventilation and exhalation - with attention to respiration at the cellular level;
6. examination of the nervous system - the brain as the message center of the body and the manner in which various branches of the nervous system are actually one major control system;
7. learning about nerve cells (neurons) and their inability to reproduce and repair in an attempt

- to help to understand brain damage and paralysis;
8. study of the exocrine and endocrine glands with emphasis on the body's response to endocrine hormones and illness attributed to malfunction of the glands;
 9. study of the digestive tract and the pathway of food with emphasis on malfunction, disorders and the effects of stress on this system;
 10. examination of the urogenital system - how the body rids itself of wastes- the reproductive system including the study of sex cells, fertilization, pregnancy, and the role of hormones on male and female reproductive systems;
 11. field trips to local health facilities.

All activities will integrate lecture and laboratory so that the students will gain a better understanding of where an organ is located in the body, how it functions, and how organs functioning together maintain an organ system.

Course Content

Skeletal system

Muscular system

Integumentary system (skin, hair, nails)

Heart/Circulatory system (pulse, respiration, and heartbeat)

Respiratory system (ventilation and exhalation)

Nervous system (brain, spinal column, central nervous system, autonomic nervous system, peripheral, sympathetic, parasympathic system and temperature control)

Endocrine/Exocrine system

Digestive system

Urogenital system

All systems will include lecture and laboratory as well as dissections, the use of various instruments, and familiarity with the following procedures: EKG, EEG, CAT Scan, Ultrasound, and X-ray as well as how to do various routine blood tests and urine analysis.

- ADVANCED PRE-ALLIED HEALTH - Quarters 1, 2, and 3
- 5 days per week
 - 10 credits
 - prerequisites Health,
Biology, Chemistry

Program Objectives

Clinical chemistry

In order to introduce students to basic clinical chemistry, and to gain familiarity with medical testing, activities will include:

1. how routine blood and urine tests are performed;
2. how specimens are collected;
3. interpretation of results and how this kind of information aids a clinician in solving medical problems;
4. how blood and tissue typing relate to the immune system (antibodies versus antigens);
5. transplants, tissue rejection, and transfusions
- discussion to include risks.

Nutrition

In order to gain a better understanding of our nutrient and caloric needs for the maintenance of basal body temperature and normal body functioning, activities

will include:

1. explanation of the differentiation between warm-blooded and cold-blooded organisms;
2. assessment of the six essential nutrients including where they are found, how they gain entrance into the body, and whether or not we are eating properly;
3. discussion of supplemental vitamins and minerals versus megadoses;
4. examination of calories and dieting - diets with all the essentials versus a "crash diet";
5. definition of diabetes mellitus;
6. regulating a diabetic diet;

Microbiology

In order to gain an insight into the many pathogens which exist, and how infections can be prevented, controlled and/or cured.

Activities will include:

1. sterile techniques in microbiology;
2. use of the autoclave in microbiology;
3. the use of culture media, streaking plates and incubating materials to be tested;
4. the proper handling and disposal of contaminated materials;

5. the recognition gram-positive and gram-negative bacteria on prepared slides;
6. antibiotic therapy - the mode of action on bacteria - effects on the human body - resistant bacteria;
7. the study of viruses - how they reproduce - why viruses do not respond to antibiotics - the bacteria-like virus mycoplasma.

Psychology

In order to heighten students' awareness of how the psyche affects the human body and its functions to help the chronically ill patient cope with the reality of their illness,

Activities will include:

1. textbook readings, role-playing, and discussions to promote a better understanding of the human mind;
2. the identification of feelings, reactions, and the steps toward acceptance;
3. presentations by guest speakers - psychiatric and medical social workers

Course Content

Clinical chemistry (interpreting test results, various routine tests, blood drawing and

blood typing)

Nutrition (a conclusive unit on carbohydrates, fats,
proteins, calories, dieting and diabetic diet)

Microbiology (obtaining a culture, sterile techniques,
innoculation of culture media, antibodies,
antibiotics - the affect on bacteria and
on the human body)

Psychology (chronic illiness, terminal illiness,
geriatrics)

As time allows, field trips to health care facili-
ties and laboratory facilities will be encouraged.

FIELD WORK - Quarter 4

- Block time to be arranged into individual schedules
- no extra credit, receipt of a certificate after successful completion of full year with passing grade for each quarter

Program Objectives

In order to give students the opportunity to work in an area of interest, and to relate to both employees and patients in a health care environment,

Activities will include:

1. block time where students will work and or train as nurse assistants, laboratory assistants, x-ray assistants, etc.;
2. one period per week devoted to discussing what was learned and experienced during the time spent in the health care facility;
3. the opportunity to ask questions and to work on securing gainful employment for entry level positions after completing high school.

Course Content

Facilities will vary depending upon cooperating facilities within a locality. Some facilities may have

a nurse assistant program that students can become involved in for an additional certificate of completion issued from the health care facility. Students who do not complete the field work will not have completed the program and during term 4 will be placed in study halls unless the student is eligible for early release from school.

APPENDIX C

MATERIALS AND RESOURCES

Occupational Information
1025 occupations qualify
Guidance Information System (GIS)
Houghton Mifflin Company

Barron's Educational Series, Inc.
Woodbury, New York

Laboratory Techniques for High School
A work-text of bio-medical methods
Edwards and Cimmino

Delmar Publishers, Inc.
2 computer Drive West
Box 15-015
Albany, New York 12212

Allied Health Occupations Catalogue

Body Structures and Functions
Fong, Ferris and Skelley

Microbiology for Health Careers
Fong and Ferris

J.B. Lippincott Company

Workbook for The Human Body in Health
and Disease
Memmler and Wood

Brady Publishers - A Prentice Hall Publishing
and Communications Company

Out of the Classroom and into the Hospital
Being a Nursing Assistant and Other Health
Occupations for Vocational Students

Brady's Introduction to Medical Terminology
Lillis

The Health Care Worker
text and workbook- Bradasch and Chesebro

Technicourse
P.O Box 3916
Long Beach, California 90803
Life Sciences for Nursing and Health
Technologies - Thomas

Harper and Row Publishers
New York, Hagerstown, San Francisco, London
Anatomy and Physiology
John Raynor

The C.V. Mosby Company
11830 Westline Industrial Drive
St. Louis, Missouri 63146

Nasco Science
901 Janesville
Fort Atkinson, Wisconsin 53538

Audiovisuals

Brady - A Prentice Hall Publishing and
Communications Company
Bowie, Maryland 20715

Multimedia Programs for Health Education

Career Aids, Inc.
20417 Nordhoff Street
Chatsworth, California 91311

Food and Nutrition
Health Education Series
10,000 Culver Boulevard Dept. N4
P.O. Box 802
Culver City, California 90232 - 0802



