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## Editor's Note

Included in this issue are facets of some current issues facing health occupations teachers, administrators, and teacher educators. Information has been collected through research studies and general searches of the literature to assist personnel in health care to keep abreast.

Witmer reported findings from a study that identified competencies needed by health occupations teachers. Conclusions drawn from a review of the literature indicated that current instruments being utilized to identify educational needs of health occupations teachers contain competencies that are basic in education and are not reflecting competencies needed to meet the challenges of the changing workplace in health care settings.

Brandt and **Rzonca** revealed information regarding manpower changes in the health care industry related to the current use and future need for **multiskilled** manpower. Findings indicated that **all** hospitals currently were using some personnel as **multiskilled** workers. Health occupations educators are responsible for preparing the labor force for health care and must recognize these changes and plan to revise and develop programs to help meet the manpower needs necessary for delivery of quality health care.

Davis reported on the perceived relationship of science and HOE competencies at the high school level. An outcome of the study was that some education agencies in North Carolina allowed **HOE 1** to be substituted for the additional science requirement for high school graduation.

Another major concern to educators as revealed by Sullivan and Ebrite is classroom discipline. The authors addressed the causes, prevention, and intervention techniques for discipline problems and indicated that effective planning for classroom instruction can help decrease discipline problems.

With all the changes, issues, and concerns in health care as well as the classroom, laboratory, and clinical areas, teachers constantly are faced with stressful situations. Robinson presented a discussion of teacher stress which included a definition; causes of stress in the classroom, laboratory, and clinical experiences; stages of stress; effects stress has on teachers; reactions to stress and suggestions for alleviation of stress; and a recommendation for educating teachers about stress.

Peacock reviewed the "Health Care Worker" which provided a global view of knowledge and attitudes required of health care workers functioning in a variety of settings. Evans reviewed "Contemporary Practical/Vocational Nursing," an introductory book for students in practical nursing.

As expressed by Dr. Catherine Junge in 1986, health occupations teachers, administrators, and teacher educators are faced with many challenges today which necessitate keeping abreast of changes in health care delivery due to advancing technology, changes in philosophy and modes of delivery of health care, as well as the impact of these changes on health occupations curricula. Educators should be ever cognizant of these changes.

Norma J. Walters  
Editor

EDUCATIONAL COMPETENCIES FOR HEALTH OCCUPATIONS EDUCATORS

Dorothy M. Witmer<sup>1</sup>

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Abstract: Health occupations teachers are facing many challenges which necessitate development of new competencies if their students are to be prepared for a changing health care delivery system. A study was conducted in Nebraska during 1987-88 with a two-fold purpose: (a) to identify the competencies needed by health occupations teachers as they perceived them, and (b) to compare these results with a study of health occupations teachers conducted seven years earlier. Respondents identified **utilizing** microcomputers in teaching as a top priority. A review of literature indicated that instruments being used to identify educational needs of health occupations teachers contain competencies that are basic in education and are not reflecting **competencies** needed to meeting the challenges of the changing workplace in health care settings. Recommendations are made for development of questionnaires that assess health occupations teachers' competencies needed in the health care delivery system.

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Health occupations educational programs are in the **midst** of a crisis with decreasing enrollments and a rise in health care consumers who need and will continue to need a continuum of health care services. Adding to the problems facing health care professionals are rising numbers of aging health care consumers. Dr. T. Franklin Williams, Director of the National Institute on Aging, stated in 1987, "Our most critical need for academic leadership is in gerontology and geriatrics, for the faculty members to teach essentially all health and human service professionals in these fields, because virtually all such professionals will from now on be involved in care of older people" ("Report on Task Force," 1987, p. 295).

With the increasing numbers of elderly consumers who need more health care services and an evolving health care system, instructors in health occupations education are facing new challenges. Competencies of instructors must reflect the demands they face.

#### Literature Review

##### Idaho Study

Taylor (1980) and associates surveyed instructors in six program areas of vocational education. The instrument in this study contained 107 competency statements compiled after an extensive literature search. The competencies ranked consistently by teachers as a high need were those relating to instructional evaluation, accommodating needs of nontraditional students and keeping professionally updated.

##### Earlier Nebraska Study

Ebrite (1981) completed her study of health occupations teachers in Nebraska using 34 competency statements to assess problem areas. Stimulating students to assume responsibility for their own learning, providing for **art culation** between health occupations programs, determining students!

instructional needs and evaluating teacher effectiveness were high on the response list. According to **Ebrite**, these responses **were** similar to responses from a former study completed in Colorado, Oklahoma, and West Virginia in 1979.

#### North Carolina Study

A different list of concerns of health occupations teachers was identified by Stevens (1983) in North Carolina. Needs of health occupations teachers were in the areas of public relations, design and implementation of community surveys, budgeting and long-range planning. Self evaluation of instructional effectiveness was among the top five areas of need, also.

#### Illinois Study

The instrument used by Stevens contained competencies that were different from those in studies by Taylor (1980) and Ebrite (1981), but did not reflect the concerns of employers and needs identified by Shea (1983). Shea reported a research study conducted by the Southern Illinois University School of Medicine. in which employers stated their concerns about health occupations education. Employers from a variety of employment settings (**ambulance** services, blood banks, home health agencies, long term care facilities, hospitals, and others) identified five key issues which have direct meaning for health occupations instructors! **competencies:**

1. Need for improved communication between service **and** educational institutions;
2. Need for improved understanding of roles among allied health personnel, nurses, and health practitioners;
3. Overspecialization in training of students, leading to career inflexibility;
4. Lack of regional training programs; and

5. Need for more convenient and accessible continuing education programs.

A multidisciplinary team of health occupations educators provided conclusions and recommendations about each issue raised by employers. A brief discussion of each issue and the recommendations follows.

The first concern voiced by employers is that students are not being prepared for the realities of the job. A major recommendation is the "working" advisory committee, made up of representatives from employing agencies, who actively work for improvement and problem solving (Shea, 1983, p. 120). Educators concluded closer ties between education and service must occur; communication between the two needs much improvement.

A second concern is the misunderstanding which occurs about the roles and responsibilities of various health care professionals. Educators recommended more interdisciplinary training and education. It is a responsibility of educators to provide interdisciplinary exchanges in the educational setting, thereby increasing understanding of each other's role.

The third concern, the need to reduce overspecialization in educational programs, is a frustration to employers who feel students cannot accept responsibilities outside **their own** field. Employers explain this is difficult in small institutions where budget restraints prohibit hiring a person for every speciality. The most common suggestion for improvement is **multicompetency** training based on a model which includes common skills, specific skills, and advanced skills.

A fourth concern is the lack of regional training. Employers want well-trained personnel in all areas but all programs of training are not available. As a result, on-the-job training is an additional effort employers must provide. The provision of some training programs is difficult

because of reduced funding and reluctance of state agencies to approve small programs with few graduates. Educators agree extended programs need to be offered to outlying areas and cooperation is necessary between employers and schools.

**Employers'** final concern was expressed by 40% of the respondents: There is a lack of continuing education at the time and location convenient to working personnel. Educators responded with **the** overall recommendation that educational institutions, professional associations, employers, and state boards of education should work together in planning a system of continuing education. Shea (1983) summarized by repeating the need for greater cooperation between employing agencies and educational institutions in order to progress in health occupations education and health care delivery.

#### Concerns of Allied Health Educators

Concerns **about** graduates of health occupations programs were discussed by Abrams and Collins (1985) in Review of Allied Health Education: 5. Health occupations graduates must be able to cope with changes in an evolving health care delivery system. Abrams and Collins wrote that health occupations graduates should possess **competencies** in the following areas: clinical assessment and evaluation, health promotion and prevention, and management and supervision, marketing and public relations, political and legislative ramifications, business and finance, computer literacy, creativity and problem solving, leadership, counseling, education in stress management, and ethics and professionalism. Abrams and Collins, in promoting these areas of competency, said, "The prospective payment system has indeed created a need for a new breed of allied health professionals" (p. 27). These **competencies** are needed by health occupations graduates to meet the challenges of today. If they are to be taught, health occupations teachers

must possess them, or at least be able to teach them. The authors, in recommending these **competencies**, were referring to programs of greater length than one year; it is unreasonable to expect that all previously mentioned **competencies** can be taught in a one-year curriculum. Review of Allied Health Education: 5 contains other directives for developing training programs which yield graduates capable of serving people in the rural areas and meeting the health care needs of an aging society.

#### Geriatrics Needed by Health Occupations Graduates

The need to incorporate geriatrics into health occupations programs is supported by a study in a special issue on gerontology and geriatrics in Journal of Allied Health (1987). The Task Force on Gerontology and Geriatric Education in Allied Health, reporting in that issue, said allied health students are not being prepared in sufficient numbers to treat the increasing elderly population. Incorporating geriatrics into health occupations curricula is another challenge, and consequently, indicate another area of competency needed by health occupations teachers.

#### Need for Study

The review of literature has identified a broader range of **competencies** than those found in survey instruments asking instructors about their educational needs. As indicated there is a need for instructors to become more competent in areas **such** as recruiting, instruction of problem solving methods, computer technology, gerontology, and the changing tasks of health care workers. In addition, assessments of educational needs and **competencies** of health occupations teachers do not reflect the challenges facing teachers today. This became the rationale for the present study.

## Purposes of Study

In order to learn how health occupations teachers in Nebraska currently perceived their educational needs, a study was conducted in 1987-88. The purpose of the study was twofold: (a) to identify the **competencies** needed by health occupations teachers as they perceived them, and (b) to compare these results with a prior study of health occupations teachers conducted seven years earlier. It was decided not to change drastically the instrument used in the earlier study, although the literature review revealed other competencies could be included.

The major objectives of the study were to:

1. Identify educational competencies needed by health occupations teachers,
2. Identify the five competencies with highest need as prioritized by the teachers, and
3. Compare priority needs of the 1987-88 study with priorities of health occupations teachers in 1979-80.

## Methodology

### Population

Ninety-seven teachers were involved in the study. Ninety-five postsecondary teachers were identified from the publication of postsecondary colleges and programs published by the Nebraska Division of Vocational Education, Two Year Postsecondary Directory (1987). Two secondary health occupations instructors were identified by the Division of Vocational Education.

### Instrumentation

The instrument used to assess the need for educational competencies of health occupations instructors in Nebraska was originally compiled and

implemented by Ebrite (1981). The instrument, with minor modifications, was used for comparison of results of the two studies. Modifications of the survey instrument resulted in a list of competency statements reduced from 34 to 28. The term problem, used to indicate ranking of importance of the competency statement in Ebrite's study, was changed to need. The highest level of need was indicated by checking the column which was assigned a number of 4; for high level of need, 3; for medium level need, 2; for low level of need, 1; and for no need, 0. A new competency statement was included in the 28 statements: Utilizing microcomputers in teaching. Respondents were also asked to list needed competencies that were not included on the questionnaire.

Two other questions were added to the instrument:

1. Have you had any courses specific to geriatric clients, and
2. With the expected increase of elderly who will receive services from health care workers, do you see a need for health occupations teachers to have a course in gerontology?

In a separate question, respondents were asked to select and rank from the 28 competency statements, the five statements which they considered to have the highest level of need (priorities). These statements were ranked one through five, with one the highest priority and five the lowest priority.

#### Validity and Reliability

The questionnaire used in this study was the same questionnaire used by Ebrite (1981) with some minor modifications. Ebrite used the items of this questionnaire in a similar study of three other states in 1979. The questionnaire had been submitted to a review panel by Ebrite to determine its validity for use in Nebraska. The modified questionnaire was submitted to health occupations instructors and other vocational educators to validate its

use. All tasks were considered valid by the educators. In the present study, the 28 competency statements were analyzed for reliability using Chronbach alpha. The standardized item alpha was computed as .9623.

#### Data Collection

The questionnaire with cover letter and stamped return envelope was mailed to 97 teachers. Each questionnaire was pre-coded with letters indicating the school or college and the number of the questionnaire. A due date was noted in the cover letter for return of the surveys. Fifty-two questionnaires (54%) were returned by the specified date. A telephone follow-up was made to non-respondents, requesting return of the questionnaires. At the conclusion of the survey, 60 questionnaires (62%) were returned.

#### Data Analysis

Instructor surveys were analyzed for level of need for all 28 competency statements, using descriptive statistical procedures, the mean and standard deviation. Those competency statements which were selected most frequently and ranked by health occupations teachers as priorities of need were identified. The priorities ranked by health occupations instructors in 1987-88 were compared to those identified in the earlier study, 1979-80. Statistical procedures were performed using SPSS/X Package for Social Sciences.

#### Results, Discussion, and Implications

The findings are discussed in relation to the objectives of the study.

**Objective 1:** To identify the educational **competencies** needed by health occupations instructors.

The competency statements are listed in Table 1 in descending order by mean. Standard deviations are provided also. The competency statement

with the greatest level of need is listed first. Utilizing microcomputers in teaching ranked highest with a mean of 2.817 (See Table 1). All competency statements with a mean of 2 or above indicated at least a medium to upper level need. The means of 26 of the 28 competency statements reflected some evidence of need.

The use of microcomputers in teaching is one of the latest technologies introduced into the classroom. It is only in the last several years that microcomputers have been used by teachers in Nebraska. Some health occupations instructors are not using them at this time. It is reasonable to expect anxiety in the use of a new technology. This was reflected in the level of need.

The competency statement with the second highest mean, stimulating students to assume responsibility for their own growth, appeared as a high level of need in the previous study conducted in Nebraska. Experience has shown that this remains a chronic problem voiced by colleagues in **health** occupations education, as well as other vocational areas.

Understanding instructor liability, the competency statement with the third highest mean, is **an** apparent reflection of **instructors'** concern with lawsuits. Instructors are not immune to involvement in potentially liable situations.

When instructors were given the opportunity to list other needed competencies, none were listed. It cannot be concluded, however, that all needed competencies were identified in this questionnaire, especially in view of the broad range of **competencies** discussed in the literature review. Responses to the two questions about courses in gerontology were as follows: To the question, "Have you had any courses specific to geriatric clients?," 29 had a course and 30 had not: To the question, "With the

Table 1

Ranking of Competencies by Level of Need, Using Mean and Standard Deviation

(4 = high need, 0 = no need)

Competency Statement	Mean	Standard Deviation
Utilizing microcomputers in teaching	2.817	1.186
Stimulating students to assume responsibility for their own growth	2.250	1.202
Understanding instructor liability	2.119	1.247
Providing learning experiences for disadvantaged students	2.086	1.174
Determining each student's learning needs and instructional needs	2.034	.982
Adapting materials and methods of presentation to each student's level of understanding	2.000	.982
Providing for articulation between health occupations programs	2.000	1.189
Providing classroom experiences for application of problem solving techniques	1.950	1.141
Writing task analyses	1.949	1.074
Evaluating teaching effectiveness	1.817	1.142
Analyzing test results	1.776	1.215
Constructing tests	1.717	1.136
Developing student performance evaluation tools	1.650	1.162
Evaluating instructional materials	1.621	.952
Evaluating learning experiences in the occupational (clinical) area	1.600	1.012
Evaluating student performance in the laboratory	1.508	1.073

Table 1, continued

Competency Statement	Mean	Standard Deviation
Evaluating student performance in the occupational area	1.450	1.016
Determining relevant curriculum content	1.390	.947
Writing student performance objectives	1.333	1.100
Writing course objectives	1.300	1.046
Utilizing a variety of instructional methods (lecture, discussion, role playing, etc.)	1.267	1.056
Writing lesson plans	1.217	.976
Developing course outlines	1.217	1.043
Planning student laboratory experiences	1.200	1.117
Providing learning experiences in the actual occupational area	1.167	1.092
Allowing each student time to master new manipulative skills	1.119	.966
Presenting a lesson	.967	.901
Demonstrating manipulative skills	.949	.879

expected increase of elderly who will receive services from health care workers, do you see a need for health occupations teachers to have a course in gerontology?," 46 said yes and 11 said no. Over 49% of respondents had participated in continuing education related to geriatric clients. Over 76% of the respondents agreed health occupations instructors need courses in gerontology.

Objective 2: To identify the five competencies with highest need as prioritized by the instructors in the 1987-88 study.

In a separate section of the questionnaire, instructors were asked to review the 28 competency statements and to select the five statements of top priority. They were to list priorities one through five with one indicating the highest need and five the lowest need. Table 2 displays the competency statements selected by priority of need for both studies. In the column labeled Priority 1987-88, priorities 1 and 5 show more than one competency statement because the same number of instructors selected different statements.

The priority listing in Table 2 differs from the ranking of competency statements by mean in Table 1, except for utilizing microcomputers in teaching. This statement was ranked **first** by mean and by priority selection. The other differences in ranking of competency statements may be due to some respondents not listing their priorities and the wide range of statements selected to indicate priorities. There were many different statements selected as a priority, resulting in a low frequency of selection for any one competency statement.

Objective 3: To compare priority of needs of 1987-88 study with the priorities of health occupations instructors in 1979-80 study.

#### Study of 1979-80

Table 2 displays the comparison of competency statements as they were ranked for priority of need in both studies. Ebrite (1981) did not report numbers and percentages of respondents who selected the competency statements for priority of need, therefore, this information is not presented for comparison in the table. Several competency statements appear at priority levels 2, 3, and 5; these were selected by an equal number of respondents.

Table 2

Comparison of Competency Statements for Priority of Need, 1987-88/1979-80

Competency Statement 1979-80	Priority	Priority 1987-88
Utilizing microcomputers in teaching	1	N/A
Understanding instructor liability	1,3,5	N/R
Stimulating students to assume responsibility for their own growth	N/R	1
Evaluating student performance in the laboratory	2	N/R
Allowing each student to progress at his/her own rate	N/A	2,4
Evaluating student performance in the occupational area	N/R	2
Determining each student's learning needs and instructional needs	N/R	3
Providing learning experiences in the actual occupational areas	N/R	3
Constructing tests	.4,5	N/R
Evaluating teaching effectiveness	5	5
Allowing each student time to master new manipulative skills	N/R	5

Note. N/R = not ranked as one of the top five priorities; N/A = competency statement was not included in this study. In both studies, more than one competency statement appears at the same priority level because equal numbers of respondents selected those statements at that level. Conversely, different respondents selected the same competency statement for different priority levels.

Utilizing microcomputers in teaching was not part of the questionnaire in Ebrite's study and cannot be compared here. The number one priority selected

by the highest number of respondents was stimulating students to assume responsibility for their own growth.

#### Study for 1987-88

Understanding microcomputers in teaching is not a surprising top priority of need for instructors in this age of technology in the classroom. Understanding instructor liability, selected as a second priority, also seems to reflect a present concern in society, the lawsuit, which is more prevalent today than seven years ago. The other priority statements are not dissimilar to the studies by Taylor (1980) and Stevens (1983) in the review of literature.

#### Similarities Between the 1979-80 and 1987-88 Studies

The only competency statement from the 1979-80 study prioritized the same as the current study is evaluating teaching effectiveness. Both studies show this statement prioritized as number five. Other priorities show instructors have a continual concern for evaluating student performance and their own teaching effectiveness.

#### Differences

Statements appearing in the ranking for priority of need are different from each other in all priority levels with the one exception previously mentioned. Understanding instructor liability, prioritized as number two in 1987-88, did not appear on the priority list in 1979-80.

#### Implications

The survey instrument used in this study was limited to competencies which are very basic in vocational education. The questionnaire was modified to a limited degree in order to show comparisons with the responses of the earlier study. The literature review indicates as updated instrument is necessary to reflect the times. Current trends in health occupations

education: shortages of personnel, dissatisfaction with graduates among employers, need for more cooperation between educators and employers, increased demand for workers who can meet the needs of the elderly, and more emphasis on skills outlined in The Review of Allied Health Education, 5, clearly indicates health occupations educators need a survey of greater dimension and scope. It appears survival of programs will depend upon the extension of competencies to include: problem solving and creativity, computer technology, recruiting and marketing, gerontological content, and ability to cooperate with employers to produce graduates who are flexible and capable of meeting realistic demands of the job for which they are trained. Survey instruments must reflect competencies needed in a changing health care delivery system. Instructors in health occupations programs should ask themselves, "Am I teaching competencies to enable students to meet the demands of today's health care delivery system?," and "Am I competent in the areas which should be taught?"

#### Conclusions and Recommendations

The following conclusions and recommendations are made as a result of the 1987-88 study in Nebraska.

#### Conclusions

1. Health occupations instructors are concerned about their ability to utilize microcomputers in teaching.
2. Health occupations instructors recognize the need to understand the liability issues of teaching.
3. Instructors want to be effective in teaching.
4. Stimulating students to assume responsibility for their own growth is a continued concern for instructors.

5. Providing meaningful learning experiences for all, including disadvantaged students, and evaluation of student progress, is of high priority.

6. There is a need to provide continuing education in geriatrics/gerontology for health occupations instructors to prepare them for the **health** care needs of an aging population.

7. The survey instrument to assess **competencies** for health occupations instructors must be updated as necessary to meet changing educational needs caused by a rapidly changing health care delivery system.

#### Recommendations

1. Educational needs assessment surveys of health occupations instructors **should** include **competencies** graduates of programs will need to meet the expectations of the health care industry.

2. A working advisory committee should be formed to assist in the development of the competency statements included in a needs assessment survey of health occupations teachers. Relying on previous survey instruments is no longer sufficient.

3. Health occupations instructors need to participate in continuing education in geriatrics/gerontology if they are to be prepared to teach students how to serve this special population which is increasing in our society.

4. Geriatric care should be a fundamental part of health occupations curricula.

5. Health occupations instructors need to become knowledgeable about the uses of microcomputers in teaching, and appropriately apply this technology in their teaching.

6. Continuing education on teacher liability issues should be available for all health occupations instructors.

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CURRENT AND FUTURE USE OF THE **MULTISKILLED HEALTH WORKER**

Joyce Brandt<sup>1</sup>

Chet Rzonca

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Abstract: Changes in health care delivery are affecting the manpower needs of the health care industry. The two research questions in this study examined one aspect of the manpower changes: the current use and future need for **multiskilled** manpower. The study sample represents 40 percent of all licensed acute care hospitals in Iowa under 100 beds for a total of 38 hospitals. Frequency tables and percentages were used to portray the number of small hospitals that were currently assigning manpower to multiple skills. All hospitals were found to be currently using some personnel as **multiskilled** workers. Registered nurses were most frequently given **multiskilled** assignments and respiratory therapy was the most frequent skill assigned **interdepartmentally**. Seventy-nine percent of the respondents indicated they **would** use more **multiskilled** manpower if available. Further research is recommended to determine if this trend is occurring in larger hospitals and other aspects of the health care delivery system.

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## Introduction

The health care industry is a social institution in transition. Many of the changes are reactions to environmental changes and governmental interventions in health care delivery (Baker, 1986; Raffel, 1984). In addition, there has been a continuous growing demand for health care services due to increased population, advanced technology and increased access to health care services (Baker, 1986; Hatch, 1986). These changes are affecting the manpower needs of the industry. Health occupations educators, who in part prepare the labor force for this industry, must recognize these changes and systematically plan to revise and develop programs to help meet the manpower needs necessary for the delivery of quality health care services to the public (Jaffe, Oglesby & Drewes, 1982; National Commission on Allied Health Education [NCAHE], 1980; Sorokin, 1986). Thus, this study examines one component of the changing manpower needs in small hospitals, the current use and future needs for the **multiskilled** health worker.

### Purpose of the Study

The purpose of this study was to describe the current use and determine if there is a future need for **multiskilled** health workers in small Iowa hospitals and to further describe the skills and mixes of skills that would provide the type of **personnel** preferred by hospital managers. Specifically the two main research questions were (a) Are small hospitals in Iowa using health personnel as **multiskilled** workers? and (b) What is the future potential use for **multiskilled** personnel?

### Methodology

During the planning for the study the Iowa Hospital Association, small hospital division, was contacted and provided technical assistance for the

study . As a result, the study was discussed with hospital administrators at a scheduled meeting and was described in a weekly mailing prior to the first mail contact requesting participation. In addition to supporting the study, the Iowa Hospital Association requested an opportunity to act as an advisory committee in considering the results and determining future curricular needs.

#### Sample Population

The population for the study consisted of the 96 small Iowa hospitals (under 100 beds) that are licensed by the Iowa Department of Inspections and Appeals to provide general acute care. A random sample of 43 hospitals was selected from this population. The population and sample were stratified by size and long term care patient services. Thirty-eight respondents (40% of the population and 88% of the initial sample) agreed to participate in the study .

#### Instrumentation

The questionnaire to collect the data was divided into three sections. Section A provided demographic information regarding the hospitals in the survey, including ownership, services provided and types of specialty personnel on staff. Section B contained questions designed to describe the current use of **multiskilled** health personnel. The questions in Section C were designed to determine if respondents were interested in using more/other types of **multiskilled** health personnel in the future. Sections B and C also included some general questions to determine the respondents' awareness and support of **multiskilled** workers, including advantages and disadvantages of using **multiskilled** workers.

Although, similar studies had been previously conducted by other researchers, the instruments that were used did not specifically address the

research questions of this study. Therefore, the open-ended items included on the questionnaire used for this study were developed with the assistance and advice of the Iowa Hospital Association and the dissertation committee. The original questionnaire was piloted in three small hospitals. Following the pilot study, several items were modified according to suggestions and recommendations with 100% agreement of committee members.

#### Data Collection

The data were collected through a **pre-scheduled** phone interview with the persons identified by the chief administrator. The phone interview was used in an attempt to increase the reliabilities of the data collected, increase the response rate and to decrease the number of unanswered questions. The cost factor in time and phone expenses was efficient when compared with on site interviews.

The process used to obtain the assistance from the small hospitals included the initial information in the Lettergram from the Iowa Hospital Association, followed by a personal letter to the chief administrator from the study investigator. The letter requesting participation in the study included a copy of the questions that would be asked during the phone interview. The weeks following this mailing administrators were contacted by phone and asked if they were willing to participate in the study. Once the administrator agreed to participate, he/she was asked to identify the appropriate person(s) to complete the study. Thirty-one of the respondents were hospital administrators, five respondents were department heads and two were personnel directors.

## Data Analysis

The data were analyzed and displayed through frequency distributions. The data provided tables of frequency counts and, when appropriate, percentages of the counts were used.

### Definition of Terms

The following four terms are central to the study. While there was general agreement among the respondents regarding use of these terms, some variance was expected. This slight variance along with different departmental responsibilities was expected to lead to some overlap in the use of the **inter-** and intradepartmental when describing **multicompetency** skill areas.

The term interdepartmental describes **multiskilled** workers assigned to provide services in more than one department. Intradepartmental describes **multiskilled** workers assigned to work in several units or areas within departments. Multiskilled Health Worker applies to those health care specialists who are trained, **credentialed** and assigned to (a) multiple units or areas within a department or (b) more than one department. Add-a-Comp is a term initiated by the Methodist Hospital of Indiana Corporation (1986) to describe preparation for interdepartmental assignment to traditional health specialists. The assignments and skills of **multiskilled** workers are diverse.

### Results and Discussion

For the first research question "Are hospitals in Iowa using health personnel as **multiskilled** workers?", respondents identified the additional skill areas they had assigned to traditional health care workers. For the second research question, "What is the future potential for the use of health

care personnel in multiple skills?", respondents identified desirable future added competencies and skill mixes.

Table 1 identifies competency areas assigned to traditional health care workers as reported by the respondents. In order for a competency area to be initially listed in the table, at least three responding departments had assigned the competency area to traditional health care workers. The entire array of skills reported are therefore not presented in the table. In total, 39 skill areas were identified by at least one respondent. Specific skills within interdepartmental assignments were not identified. However, it may be assumed that the additional competencies assigned on an interdepartmental basis tend to be basic and are certainly not inclusive of all skills performed by a traditionally prepared health care worker.

#### Current Use of **Multiskilled** Personnel

The current use of health personnel as **multiskilled** health workers was measured by determining (a) if personnel were assigned intradepartmentally, and (b) if and to what department personnel were assigned interdepartmentally. The data were collected by hospital department.

Intradepartmental assignments, the cross-training model. Hospital departments are often subdivided into specialty areas to provide the technical services required in each area. For example, nursing service is often subdivided into units such as obstetrics, and medical-surgical units. It has often been the practice to hire and assign personnel to work only within a specialty unit within one department. The literature refers to the use and the training of personnel to work across all areas within a department as cross-training.

All respondents reported **at** least one person in one department was trained and assigned to work in more than one unit or area within a

Table 1

Frequency and Percentage Distribution of Selected Competencies Currently Assigned to CredentialedPersonnel (N = 38)<sup>1</sup>

Occupational Skill/Competency Areas	Registered Nurse		Licensed Practical Nurse		Nurse Aide/ Orderly		Labora- tory Personnel		Respira- tory Personnel		Radiog- raphy Personnel		Medical Records		Emergency Personnel	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
1. Respiratory	15	39	8	21	8	21	3	8							4	11
2. Laboratory	1	3									3	8				
3. Radiography	1	3					6	16								
4. Physical Therapy	4	11	5	13	1	3										
5. EKG	5	13	4	11			8	19	5	13						
6. Paramedic/ Emergency			3	8	2	5										
7. Ward Clerk/ Switchboard			2	5	8	21										
8. Business Office													4	11		
9. Housekeeping					2	5									3	8
10. Home Health Care	4	11	1	3	2	5			1	3						
11. Discharge Planning	3	8											1	3		
12. Quality Assurance	6	16											6	16		
13. Education Department	4	11														
14. Infection Control	4	11														
15. Stress Testing	1	3							4	11						

<sup>1</sup>For a skill area to be initially listed in the table a minimum of three respondents had to assign the skill to a traditional health specialty worker.

department. The cross-trained personnel assignments were often made on a daily basis dependent on the patient care services and staffing needs of the individual units.

Interdepartmental assignments, the added competency model. Thirty-six (95%) of the 38 respondents in the sample reported they trained and assigned at least one health care specialty group to provide additional services in other departments. The number of specialty groups assigned to other departments per hospital ranged from 1-6 specialty groups.

Registered nurses. The Iowa Administrative Code (470, Chapter 51) requires that all acute care hospitals in Iowa have at least one registered nurse on staff at all times. In addition, the nursing department provides the largest proportion of direct patient care services in the hospital. As a result, the greatest percentage of staff in all hospitals is in nursing service. Traditionally, registered nurses, licensed practical nurses and nurse aides are the health occupations personnel who provide the majority of hospital staffing.

Thirty-six (95%) of all the respondents surveyed reported they were using at least **some** of the registered nurses on staff in all nursing care areas. Several of the respondents commented that frequently the patient census was low or nonexistent in specialty areas. In an attempt to better utilize nursing staff and provide full-time employment, respondents were required to **use** the registered nurses in all areas staffed by nursing service. Several respondents reported it was only the experienced staff that were cross-trained to work in more than one of nursing service areas, however, they would like to be able to exercise this option with all nursing staff.

Respondents reported registered nurses were assigned to 11 tasks considered to be outside the nursing department. These are classified as interdepartmental or additional skill assignments. The most frequently assigned interdepartmental task for registered nurses was respiratory therapy. A total of 15 (39%) of the total sample assigned registered nurses to provide respiratory therapy skills. The additional tasks to which registered nurses were assigned are listed in Table 1.

The current shortage of health personnel seems to be affecting interdepartmental assignments for registered nurses. Five respondents reported they would like to utilize some of their nursing staff in other areas but due to the current shortage of registered nurses, they felt fortunate to have enough nurses available to staff the nursing department.

Most of the training for registered nurses assigned nontraditional skills was on-the-job training except for nurses required to take the American Heart Association Advanced Cardiac Life Saving (ACLS) course. The ACLS course is offered in the community colleges or taught by qualified staff in the hospital. (ACLS is a requirement to provide services to critical coronary care patients.)

Licensed practical nurses. Licensed practical nurses also are used to provide direct patient care in nursing departments. The scope of practice or nursing service a licensed practical nurse can provide is defined by the Iowa Board of Nursing in the Nurse Practice Act, Iowa Administrative Code, Chapter 6. The Code limits the care a practical nurse can provide and requires they practice under the direct supervision of a registered nurse in the acute care setting. Because of these restrictions and the perceived lack of diversity of the licensed practical nurse, a total of 17 (45%) of the respondents reported they do not use practical nurses or they use them

only in long term care. Two of the respondents reported they had just begun hiring licensed practical nurses because of the nursing shortage.

In those hospitals which hire practical nurses, they were assigned to six tasks considered to be outside the nursing department. As with the registered nurses the most frequent interdepartmental task to which practical nurses were assigned was respiratory therapy. Four of the tasks to which practical nurses were assigned were tasks to which registered nurses were assigned also. Two tasks, ward clerk duties and EMS responsibilities were not included in the registered nurses interdepartmental assignments.

The licensed practical nurses were prepared for all nontraditional tasks except home care and emergency medical services (EMS) through on the job training. In these two areas there are specific state approved courses required for staff to provide these services.

Nurse aides. Nurse aides are another group of personnel traditionally used in the nursing department. There are no specific training requirements for nurse aides who work in acute care, however, nurse aides who work in long term care must successfully complete a 60 hour state approved curriculum. The acute care facilities either require nurse aides to take a state approved 60 or 120 hour course or train them on the job.

Twelve (32%) of the hospitals in the survey did not use nurse aides or used them only in long term care. This change has occurred because of the increasing acuity level of patients in acute care.

Aides are trained and assigned to six additional tasks in other departments. The tasks to which nurse aides are most frequently assigned are respiratory therapy and ward clerk. The ward clerk assignment can be considered by some as cross-training or an intradepartmental assignment. In

two of the hospitals, aides are also trained to work in housekeeping and laundry and are assigned as needed among the three departments. The literature refers to this type of utilization of personnel as broadbanding.

The laboratory department. The laboratory department provides a specialized diagnostic service in hospitals. The staff are technically trained to analyze specimens which are used in diagnosing various disorders or determining health changes that are occurring in patients. There are no state **licensure** requirements for laboratory personnel; however, Federal Standards require the person in charge of the laboratory to be either nationally certified or pass a National Laboratory examination.

Twenty-one (55%) of the respondents in the sample reported that laboratory personnel at their institution were assigned only to the medical laboratory. In the institutions assigning interdepartmental tasks, laboratory personnel were assigned most frequently to electrocardiography (EKG) and radiography services.

Radiography department. The radiography department is a specialized department that administers radiographs to assist in diagnosis or in radiation therapy to assist in treatment of some diseases. The diagnostic service is required in all licensed acute care hospitals in Iowa, while radiation therapy is a highly technical service usually provided in larger hospitals. Additionally, since some of the diagnostic equipment is highly specialized and too expensive for just occasional use, some small hospitals have contractual service agreements with larger hospitals. Others have formed co-ops and use **mobile** units to regularly transport diagnostic equipment and personnel to the various sites. Nine (24%) hospitals in the survey assign personnel within the radiography department to assist with

mobile units. The assignment to mobile units and ultrasound would reflect the cross-training model.

Sixteen (42%) of the respondents reported that radiography personnel were not assigned to other departments. The only interdepartmental assignment identified by at least three respondents was in the laboratory skill area.

A recent state law requires all persons who administer radiographs to obtain a permit to practice. Permits are issued by the Iowa Department of Public Health for two levels of personnel. These permits are for generalists who can perform all types of diagnostic examinations and for limited radiographers who can limit to the types of exams they can administer and to the setting in which they can perform these examinations. Generalists usually have completed a formal two-year program and passed a national examination. Limited radiographers have successfully completed a 100-hour State approved course and passed a national examination. However, when the law was implemented, persons who were administering radiographs in both categories, regardless of preparation, were grandfathered. There are still quite a few of these grandfathers administering radiographs in Iowa, in both licensed practitioners offices and in small hospitals.

Records department. The medical records department is responsible for maintaining patients' records, keeping the statistical data related to patients' care and submitting requests for reimbursement to third-party-payers such as insurance companies, medicare, and **medicaid**. Since the implementation of the prospective payment process for reimbursement for **medicare/medicaid** patients, the workload in the medical records departments has increased. Personnel assigned to this department require a minimum of basic knowledge of medical terminology, diagnostic

categories and coding. Reimbursement for care is dependent on correct coding and reporting.

Twenty-five (66%) of the respondents in the sample reported that personnel in medical records were not assigned to tasks outside the medical records department. Of the hospitals assigning interdepartmentally, quality assurance **was** the most frequently reported additional task to which medical records personnel were assigned followed by the business office and discharge planning skill areas.

Respiratory therapy department. Respiratory therapy departments assist in the diagnosis and treatment of patients who have lung and heart disease. When respiratory therapy was first initiated as a therapy it was provided by registered nurses or physical therapists. Acute care hospitals are not required by state **law** to provide respiratory therapy services. However, there has been an increase in the number of patients with chronic lung diseases in recent years **who** benefit from the basic treatments provided by respiratory therapy,

Twenty-one (55%) of the respondents in the sample reported they had a respiratory therapist on staff. Another four (11%) reported they had contractual agreements with respiratory therapists to provide consulting services when needed.

Although 17 (45%) of the respondents did not have a respiratory therapist on staff, 16 (42%) respondents provided some type of respiratory therapy services. The respiratory therapy services in these hospitals were provided by a number of other health personnel, including registered nurses, licensed practical nurses, nurse aides, emergency care personnel and physical therapists. These personnel also supplemented the respiratory therapist when the therapist was not scheduled to work.

Of the 21 (55%) who reported they had respiratory therapists on staff, six (16%) assigned the respiratory therapist additional tasks in other departments. The most frequently assigned task to which respiratory therapists were assigned was EKG. Respondents reported therapists were either trained how to perform this task in their preparatory program or learned the skill on the job.

Hospital based ambulance service departments. Emergency medical personnel were hired in those hospitals that provided the local ambulance service for the community. There were four levels of ambulance services as defined by the Iowa Department of Public Health. An EMT-A service was a basic service; the next level of service was EMT-D, this was a service where EMT-A's were trained to defibrillate patients who have had cardiac arrest; EMT-I was an EMT service where personnel were prepared to provide more technical skills in treating emergencies; and the EMT-P was a service with the highest technically trained personnel.

All ambulance services were categorized relative to equipment on ambulances and the training of the personnel who provided the services on the ambulances. Personnel who provided emergency care in ambulances must have successfully completed an approved course and passed the national certification examination which had a written and performance component.

The task in other departments to which emergency personnel were assigned most frequently was respiratory therapy. In three instances, licensed practical nurses and in one instance a nurse's aide was trained to provide the emergency ambulance services. When emergency personnel were not needed on the ambulance they were assigned to the nursing department to provide nursing care. The other most frequent assignments for emergency personnel were in housekeeping, maintenance, and security. All persons who

provided emergency ambulance services had successfully completed the state approved course.

### Potential Use of Multiskilled Health Workers

The first question asked in determining future or potential use of multiskilled health workers was "Would you use more/other types of multiskilled workers if they were available?" Thirty (79%) of the respondents, answered this question with 'yes.' Seven (18%) said they did not know; it would depend on the availability of training programs, or it would depend on the areas in which the multiskilled workers were trained. However, these seven (18%) respondents indicated something had to be done with the growing number of shortages for the health care professions. Only one respondent would definitely not use multiskilled workers in the future because in that institution patients were critically ill and the physicians would not permit use of multiskilled workers.

Respondents also were asked to identify additional skill areas and suggest the traditional health specialists who could be prepared to function in these needed areas. Table 2 identifies the additional skill areas respondents thought important and the traditionally credentialed health personnel suggested for additional preparation. In 38 instances respondents wanted to add basic respiratory therapy skills to seven established health specialties. The next most frequently mentioned additional competencies to be added were laboratory (32 times), radiography (25 times), physical therapy (23 times), and EKG skills (21 times).

All but one of the respondents felt registered nurses were one of the most versatile health workers on staff. Nine of the respondents did feel however that with the current shortages most of the registered nurses were already over extended. Twelve (32%) respondents felt registered nurses

Table 2

Frequency Distribution of Additional Competences for **Credentialed** Personnel

Health Occupations Skill Areas	Competency Area								Totals (N)
	Registered Nurse (N)	Licensed Practical Nurse (N)	Nurse Aide/ Orderly (N)	Labora- tory Personnel (N)	Respira- tory Personnel (N)	Radiog- raphy Personnel (N)	Physical Therapy (N)	Occupational Therapy (N)	
Respiratory	12	13	3	3		3	3	1	38
Laboratory	3	5	1		5	18			32
Radiography		1	1	20	3				25
Physical Therapy		4	9		1			9	23
EKG	6	4	1	5	6	1			21
Cross Trained	10	4				3			17
Occupational Therapy		1	3		1		11		16
Paramedic/Emergency		5	1		5	2	1		9
Ward Clerks/Switchboard			7						7
<b>Business Office</b>									<b>0</b>
Housekeeping			3						3
Home Health Care	2	1						1	3
Activity Coordinator	1							1	2
Community Education	2							1	3
Discharge Planning		1						1	1
EEG				1					1
Dietary			2						2
Quality Assurance	1								1
Physician Assistant	1								1
<b>Acis/Er</b> Advanced Trauma	1								1
Substance Abuse		1							1
Coding		1							1
Purchasing						1			1
Ultra-Sound						1			1

should be prepared to provide basic respiratory therapy skills, 10 (26%) felt they should be cross-trained to work in all areas within the nursing department and six (16%) felt they should be prepared to perform **EKG's**.

The respondents' feelings regarding practical nurses varied. Four (11%) of the respondents commented that the practical nurse was the most versatile of all health workers and they should become the health specialist to acquire additional skills. Six (16%) respondents felt added skills should be given to the practical nurse even though the board of nursing had limited their scope of practice. Thirteen (34%) of the respondents suggested respiratory skills for practical nurses making this the most frequently mentioned skill area. Five respondent's (13%) indicated laboratory and emergency skills as the second most frequently mentioned skill area.

Additional skills most frequently suggested for the nurse aides were physical therapy skills, by nine (24%) respondents and ward clerk skills by seven (18%) respondents. Other skill areas mentioned by more than one respondent were respiratory skills, by three (8%) respondents and occupational therapy skills, by three (8%) respondents.

Twenty (53%) of the respondents felt there should be some basic radiography skills performed by laboratory personnel. The respondents did not intend to replace the currently **credentialed** health worker in either area but to supplement their skills by having the other professional prepared to assist with basic skills when the workload in either area became heavy or to assist on call and during vacations. In addition, five (13%) respondents felt laboratory personnel should be prepared to perform **EKG's**. Other skills indicated for laboratory personnel were from the respiratory therapy and electroencephalograph (**EEG**) areas. The relationship between laboratory and **radiologic** skills is further attested to by the 18 (47%)

respondents who suggested that radiologic technicians be prepared to perform basic laboratory skills. Other skill areas suggested for radiographers were respiratory therapy and emergency care.

Eleven (29%) respondents suggested physical therapists could be prepared to provide basic occupational therapy skills. Several suggested this combination would be useful for rehabilitation services. Conversely, nine (24%) of the respondents indicated that occupational therapists could perform basic physical therapy skills. This relationship is similar to the skill mix identified for the **laboratory/radiography** skill area. Respiratory therapy skills were identified as a useful addition for both physical and occupational therapists. The most frequently mentioned additional skill for respiratory therapists was EKG by six (16%) respondents and laboratory and emergency skills by five (13%) respondents.

Additional comments. Some additional comments that were made regarding the additional competency preparation model included, "All credentialed personnel should have added supervisory skills, business administration, and budgeting." "All health programs should be developed so laddering **can be** easily facilitated." "Educational programs need to get back to basics and forget high technology, the employers can teach them the high technology if employees are well grounded in the basics." "All credentialed personnel need to have more on geriatrics included in the basic curriculum." "All credentialed personnel need to have a few years experiences in their primary preparation area before additional skills can be added."

#### Summary

The current use of health personnel as **multiskilled** workers was measured by determining if specialists were assigned to more than one unit intradepartmentally or to more than one department, interdepartmentally.

The intradepartmental assignments are sometimes classified as cross-training and the interdepartmental assignments as an added competency. All respondents reported they currently were assigning at least one health care specialist to work in several or all units within the department. Ninety-five percent of respondents reported they trained and assigned at least one person from one specialty group interdepartmentally. The small Iowa hospitals are using health specialists as **multiskilled** workers. Registered nurses were the specialty group most frequently assigned **interdepartmentally**. Nurses were assigned to 11 tasks in other departments. Respiratory therapy was the interdepartmental task most frequently assigned to health specialists.

A majority (79%) of the respondents said they would use more and other types of **multiskilled** health workers in the future if they were available. In 38 instances, respondents wanted various health specialists to have an additional **skill** in respiratory therapy. The other most frequency desired interdepartmental assignments were in laboratory (32 assignments), radiography (25 assignments) and physical therapy (23 assignments). Interdepartmental assignments between radiography and laboratory personnel were suggested as well as the combination of physical and occupational therapy. The respondents felt they would use **multiskilled** workers in the future. They were knowledgeable regarding the types of multiple skill preparation models available and the majority could identify the skill mixes they felt would be most valuable in the future.

#### Recommendations

The purpose of assessing the current use of **multiskilled** health workers was to determine if area colleges should consider revising/developing new programs to meet the changing industry needs. While acknowledging the need

for further investigation to identify specific skills and the necessity to involve other health care agencies, the following recommendations based on data collected in this study should be assessed and prioritized with the assistance of the Iowa Hospital Association:

1. A short term course should be developed to uniformly prepare health specialists for respiratory therapy skills.

2. Specific **competencies** in radiography for laboratory personnel and laboratory skills for radiography personnel should be identified.

3. EKG courses should be offered to health specialists.

4. A short term course for ward clerks should be investigated for nurse aides.

5. Credentialing for additional **competencies** should be developed cooperatively between the area colleges and the health industry.

6. There should be further consideration to assessing the need for a 'rural health worker' including the necessary skills and **credentialing**.

7. Preparatory programs in the area colleges should assess the amount of clinical time that is spent in small hospitals and how graduates are prepared for **roles** in health care delivery in small hospitals.

8. Preparatory programs should introduce the **multiskilled** concept to avoid possible barriers in the work place.

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SCIENCE COMPETENCIES IN HEALTH OCCUPATIONS EDUCATION

Judith A. Davis'

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Abstract: Health Occupations Education students and teachers recognize the relationship between life and physical sciences and the health occupations curriculum. To verify this relationship, the Division of Vocational Education, North Carolina Department of Public Instruction, funded a project for North Carolina State University's Health Occupations Teacher Education faculty to study the relationship of science and health occupations and to analyze the science **competencies** taught in health occupations courses in secondary schools. A teacher panel and technical advisory panel assisted with the study. A survey of teachers verified the relationship of health occupations and science **competencies**. Results of the survey formed the basis for matching health occupations competencies with science competencies, developing health occupations learning modules stressing science health occupations courses. Each of six modules developed for use by health occupations teachers included both health occupations and matching science **competencies**. Modules were developed for anatomy, immunity, metrics, nutrition, respiration, and health risk awareness.

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Because of the extensive system of 58 community and technical colleges in North Carolina, specialization in health professions occurs only in **postsecondary** programs. Many of North Carolina's high school graduates attend health professions' programs in the community college system. Students find their background in Health Occupations Education (HOE) prepares them well to pursue (a) associate-degree programs including dental hygiene, medical assisting, medical laboratory technology, nursing, radiography, and respiratory therapy; and (b) one-year, diploma programs in the community college system in dental assisting, medical assisting, practical nursing, and surgical technology. Most of these students are better served by taking three years of HOE in high school than by foregoing one year of HOE to take additional science courses. Some of these students **may** want to earn science credit for health occupations courses.

In order to verify and support the science competencies included in the HOE curriculum, North Carolina State University's Health Occupations Teacher Education faculty conducted a project funded by the North Carolina Department of Public Instruction, Division of Vocational Education . (hereafter referred to as State Department).

#### Background and Need for the Study

Health occupations teachers are faced with the problem of meshing related studies with the specialty education they offer. One critical relationship for HOE teachers is due to existing redundancies between science education and vocational specialty education. However, each vocational specialty seems to require its own set of associated science competencies.

Graduation requirements have increased during the 1980's and much of the increase has come in science and mathematics (National Commission on

Excellence in Education, 1983). This trend to include more science should strengthen vocational education. It can have its major impact when the specific science competencies needed for success in HOE or other vocational programs and in the working world are identified and classified. Moreover, science competencies of many students can be enhanced through certain vocational education courses including HOE.

#### Review of Related Literature

In the 1960's, vocational education leaders identified the relationship between general education and vocational specialty education. Kemp (1966) emphasized that basic skill education should be closely tied to vocational offerings to make both more meaningful to students. Kemp clearly documented the utility of such endeavors in programs designed for students plagued with various kinds of disadvantages. Osipow (1969) indicated that efforts must be made to show how skills acquired in school are useful in work. In stressing the need for the educational system to assume responsibility for preparing all students to move on to their next educational or occupational step, Venn (1964) stated that no one can be successful in occupational education without the basic tool skills of reading, writing, listening, and computing. Venn indicated that "separation of occupation from **general** education at any level increases the possibility of limiting the individual's future development because of a lack of related knowledge and general education" (p. 169).

In the 1970's, **Marland** (1971) supported career education for elementary and secondary students by citing a need for structuring basic subjects, in grades one through twelve, around the theme of career development and the requirements of the world of work. During the early 1980's, most states planned or approved increased science content in the curriculum, but

vocational education was not considered as a prescribed unit. By 1985, only 13 states allowed vocational education as part of the prescribed units for graduation (Dyrenfurth, 1985). Dyrenfurth's study affirmed that strengthened links with science education and vocational education have increased and that a focus has been made to use vocational courses to meet high school requirements in science. According to Action in the States (Task Force, 1984), several states strengthened vocational teaching by providing grants to increase science skills of vocational teachers.

According to **Mracheck** (1984), a science curriculum for **vocational-technical** education should include courses in physical sciences and the components should be integral to the student's major area of study (e.g., HOE). **Mracheck** presented a matrix of related math and science course outlines from vocational courses. **Truxal** (1984) reiterated **Mracheck** by stating that lengthening of diploma requirements by including more science and math for high school graduation would not necessarily be effected by teaching science in the usual way. **Truxal** called for a national effort to modify both vocational and science courses including more practical science in vocational courses and more technology in science courses.

A Nation at Risk (National Commission on Excellence in Education, 1983) stimulated educational reform and review of high school graduation requirements. The Commission on **Excellence** and others stimulated increased requirements for graduation (**Phipo & Flakus-Mosqueda**, 1984). Vocational **educators** in Virginia took a proactive approach to the recommendations of A Nation at Risk and developed an action plan to fit vocational education in the schools in spite of an increase in science requirements for graduation. As a result, **the** Virginia State Department approved health occupations courses as an alternative to additional science requirements (Brown, 1984).

A 1987 study showed that 45 states or territories had increased requirements for high school graduation and only 15 states or territories required vocational education for graduation. In 28 of those states and territories studied, vocational education courses were considered appropriate alternatives for mathematics and science (Frantz, Strickland, & Elson, 1987). As in North Carolina, several states have provided that the decision about science credit for health occupations or other vocational programs be a decision of local school boards.

#### Purposes of the Study

As descriptive survey research, this study was designed to (a) identify HOE courses in which success depends on knowledge of a substantial amount of science, (b) identify and classify science skills needed in two HOE courses, (c) analyze science skills showing the highest relationship to HOE, and (d) develop prescriptive training modules for HOE competencies which could facilitate achievement in both vocational and science courses.

#### Methodology

##### Identification of Courses

The project team (Health Occupations Teacher Educators at North Carolina State University) selected the areas of concentration jointly with consultants in Health Occupations at the North Carolina State Department. They selected Health Occupations Education I (HOE I) and Health Occupations II (HOE II). Introduction to HOE was not selected since it is prerequisite to HOE I. The project team and HOE consultants agreed that HOE I and HOE II contained a substantial amount of science. Following the selection, consultants from the State Department and a panel of teachers verified the courses to be appropriate.

### Advisory Board and Teacher Panel

The project team organized an advisory board and teacher panel. Seven advisory board members were selected from professionals serving on the Wake County Health Occupations Education Advisory Board. Some board members also served on the State Advisory board for HOE. The advisory board included a hospital administrator, nursing educator, dean of allied health of a community college, educational services coordinator of a local hospital, consultant from the State Department, graduate of the HOE program at North Carolina State University and a doctoral student, a registered nurse from the University. The teacher panel had four HOE teachers, two science teachers, one science teacher educator, and one HOE teacher educator.

### Preliminary Identification of Science Competencies

The project team reviewed lists of HOE and science competencies published by the State Department for use in secondary programs. By reviewing all HOE I and II **competencies** and science competencies for grades 9-12, the project team compiled a list of science competencies which matched the HOE **competencies**. The advisory board and teacher panel reviewed the lists and made comments about a possible relationship between the two sets of competencies. The Chair of Science Education and the Chair of Health Occupations Teacher Education at North Carolina State University also reviewed the lists of both **competencies** as did the Chief Consultant for HOE at the State Department.

### Instrumentation

Following preliminary identification and approval of the two competency lists, the project team compiled a questionnaire asking for perceived relationship of science and HOE competencies. The instrument was mailed to eight Regional Leadership Councils (**RLCs**), HOE chairpersons, and two local

HOE teachers for review. This group formed a pilot population for the questionnaire. The pilot group reviewed **the lists** and returned them. The project team formulated a final questionnaire based on the responses. The pilot group was asked to indicate agreement (by a Likert scale) of the relationship of the science **competencies** to the HOE **competencies**. The revised questionnaire was approved by the Advisory Board and Teacher Panel and became the survey instrument which was then sent to a random sample of six HOE teachers in **eight** regions, for a total sample of 48.

The survey instrument listed HOE competencies in four units and included below each of those units' **competencies** a listing of science **competencies** in five categories. The four units of HOE competencies were (a) Orientation to the Health Care Occupations and Agencies, (b) Interpersonal Communication and **Human** Relations, (c) Nutrition and Diet Therapy, and (d) Basic Sciences. The five Science categories were (a) Life Sciences, (b) Living Things, (c) Elementary Science, (d) Matter and Energy, and (e) General Science.

Respondents were asked to indicate the degree to which they considered the HOE **competencies** related to the science competencies. A modified Likert scale formed the basis for rating with the following ratings: 0 = unrelated, 1 = somewhat related, 2 = related, and 3 = clearly related. Directions in the survey instrument were to "circle the number beside the Science Competency that most closely describes your knowledge of the relationship of that competency to the Health Occupations Competency it follows."

An example of the items was the HOE Unit I. 02 competency, Interpret health agencies' functions. One Science competency listed was, "The learner will understand the nature of communities." from Unit 5, general science.

The Likert scale was listed with the science competency and respondents circled the degree to which they thought that particular science competency related to that particular HOE competency. Every science unit did not have competencies applicable to every HOE unit. Thus, some HOE competencies did not include a matching science competency, for example, matter and energy.

#### Validity and Reliability

Validity of the instrument was assessed by using HOE and science competencies published by the State Department for use by HOE and science teachers. In addition, the teacher panel and advisory board determined content validity. Reliability of the survey instrument was calculated by split-half reliability on both the pilot sample and the entire sample. Split-half reliability from the pilot sample of 10 showed a Spearman Brown correlation coefficient of .86,  $N=10$ . Spearman Brown split-half reliability of the entire sample was .86,  $N = 36$ .

#### Analysis of Data

Descriptive statistics were appropriate for the study since one purpose was to develop modules for those HOE competencies with high science ratings. Mean ratings, names and descriptions of modules are shown in Tables 1 and 2, respectively.

#### Results and Discussion of Survey

Seventy-five percent of the 36 HOE teachers returned the survey instrument. Teachers were in general agreement that the science areas were conceptually similar to the HOE units. The survey instrument did not include all science units with all HOE units. Every science unit did not relate to every HOE unit. Table 1 shows mean ratings by HOE teachers

Table 1

Mean Ratings by North Carolina HOE Teachers (N = 36) of Degree of Relationship Between Health Occupations Competency Units and Science Competency Categories

Health Occupations Units Science Competency Categories	I	II	III	IV
Life Sciences	2.39	2.62	-	
Living Things	2.11	-	3.00	-
Elementary Science				2.73
Matter and Energy				2.59
General Science		2.06	-	

Note: The Likert scale ranged from 0 to 3, with 3 being highest. Each mean represents a score of all 36 respondents. Cells with "-" had no science competencies in this category listed with HOE competencies on the survey. HOE Units: I = Orientation to Health Care Occupations and Agencies; II = Interpersonal Communication and Human Relations; III = Nutrition and Diet Therapy; IV = Basic Sciences.

indicating their judgment of the degree of relationship between HOE competencies and Science competencies.

Results of the survey showed that each HOE unit related to at least one science unit. Because of that agreement, the teachers encouraged the project team to develop training modules which would incorporate those science competencies into HOE units.

Development of Modules Based on High Ratings

Since several of the HOE units had high mean ratings on the survey, those units and their related science competencies were considered in developing the modules. Each HOE unit had related science competencies. The highest mean rating was for HOE Unit III, Nutrition and Diet Therapy,

Table 2

Names and Descriptions of Health Occupations Education Modules Developed Using Science Competencies

Name of Module	Content Area	Type HOE I/II* Unit
Health Risk Awareness	Health Care	CAI I, II**
Eat It	Nutrition and Communication	LAP III/IV
Metrics in Medicine	Health Care	LAP I, IV
Respiration, Energy for Life	Basic Science	ST IV
Pin the Part on the Person	Anatomy	LAP IV
Body's First Line of Defense	Basic Science	LAP IV

Note: \*Course, HOE I or HOE II  
 \*\*Unit numbers for the courses HOE I/HOE II.

and Living Things (science category). The second highest rating was for Unit IV, Basic Sciences and science category, Elementary science. With advice of the advisory board and teacher panel, the project team agreed to develop at least four modules which would reinforce science **competencies** in HOE units and which would be useful in both HOE and science classes.

The project team evaluated commercially available materials applicable to both HOE and science classes. After discussion with the advisory board and teacher panel about development of modules and the results of reviewing commercial materials, the project team agreed to develop six modules. The advisory board and teacher panel served as a reaction panel for formative evaluation of each module. The HOE RLC Chairpersons agreed to pilot test each module with their classes. As each module was developed, the **RLC**

Chairpersons provided minor suggestions (i.e., module too difficult, not enough worksheets, need clearer directions, etc.) which the team used to develop the final modules. Each module contained health occupations and science **competencies** as well as objectives.

#### Results and Discussion of Module Development

The project team developed a list of HOE competencies analyzed for science content applicable to the health occupations units. This matched list of HOE and science competencies, in addition to feedback from those teachers surveyed, formed the basis of developing modules. The list, which is 20 pages long, shows HOE competencies for each of four units in HOE I and HOE II.

With advice from the teacher panel and advisory board, the project team focused on developing modules for HOE I. RLC Chairpersons pilot tested the modules in their classrooms and provided feedback for the project team. All RLC chairpersons agreed that the modules were useful in reinforcing science competencies in HOE.

The same process was used for developing each of the six modules. Two modules were available commercially and others were developed by the project team. Each module contained health occupations and science competencies, objectives, learning activities, and student worksheets. Table 2 lists module names and descriptions of the health occupations content area as well as HOE competency unit number. Three types of modules were developed: Computer Assisted Instruction (CAI), paper and pencil Learning Activity Packages (LAP), or Slide/Tape (ST) programs.

#### Descriptions of the Modules

Health Risk Appraisal. For HOE Unit I, Orientation to the Health Care Occupations and Agencies, and Unit II, Interpersonal Communication and Human

Relations, the module Health Risk Appraisal was developed. The team used two commercially available software packages, "Health Risk Appraisal-" and "Health Awareness Games-" (Human Relations Media, 1985) for the Apple IIe microcomputer [or IBM-PC] and provided additional instructions including identification of the science competencies related to Units I and II. Worksheets were added for student use. The State Department purchased the software program and made it available to teachers. The unit included HOE competencies, unit objectives, and science **competencies** from the matched list. The HOE competency from Unit I was to translate health concepts as related to health maintenance and health care. The HOE competency for Unit II was to evaluate the harmful effects of alcohol, drugs, and tobacco patterns related to health problems or concerns. Unit objectives included the following: (a) name the leading causes of death for your age group, gender, race, and lifestyle; (b) state what relationship exists between lifestyle and mortality rates. Science competencies for the module were to (a) have an understanding of the importance of caring for the body through proper nutrition, health, and sanitary practices, and (b) discriminate between good and bad health practices. (The project team listed science competencies exactly as published by the State Department.)

Eat It. The module developed for HOE Unit 111, Nutrition and Diet Therapy, was entitled Eat It. This unit was designed as an individual and group learning activity. HOE I competencies included (a) classify dietary foods according to nutrients, and (b) describe nutritive deficiencies. The HOE II competency was to discuss basic therapeutic diets as a means of treating major diseases/disorders. Unit objectives included the following: (a) describe the major food groups in terms of classification, functions, and sources; (b) state the importance of vitamins, minerals, and water in

the diet, (c) name the major adverse effects of each dietary deficiency including conditions and diseases, and (d) work in a group to apply dietary principles to creating a therapeutic nutritional plan for identified clients. Science competencies were to (a) have an understanding of the importance of caring for the body through proper nutrition, health, and sanitary practices, (b) identify from a list of foods a menu which includes the four basic food groups, (c) define calorie, and (d) describe how energy can be obtained from matter such as the burning of wood and digestion of food. The Learning Activity Package included activities to help students **apply** nutritional principles to career situations, plan therapeutic diets, and solve stated problems (in a group). The unit included resource material, worksheets, and a group exercise. The module was 20 pages in length and contained drawings and text printed with a computer and graphics software program.

Metrics in Medicine. The module, Metrics in Medicine was developed for HOE I, Units I, Orientation to Health Care Occupations and Agencies, and IV, Basic Sciences. The unit was designed as an individual learning activity package to stress the metric system and basic measurement. The HOE competency was to describe the use of the apothecary and metric systems as they relate to health care and health maintenance. The following objectives were included: (a) solve basic problems of conversions between the Metric, English, and Apothecary systems, (b) state the importance of understanding the Metric and Apothecary systems, and (c) discuss ways alternate systems of weights and measures are used in Science and Health Occupations. Science competencies included (a) demonstrate the proper use of a laboratory instrument appropriate for the student's grade level or course, (b) demonstrate the ability to observe, (c) perform computations involving whole

numbers and common decimal fractions when given a problem, (d) measure within a given degree of accuracy when given appropriate measurement instruments, (e) demonstrate a knowledge of the basic units of length, mass, volume, and temperature in the metric system when given measurement problems, and (f) understand that the metric system is the preferred measuring system in science. The module was 12 pages in length with five worksheets of problems and hands-on activities for student pairs.

Respiration, Energy for Life. Respiration, Energy for Life was developed for Unit IV, Basic Sciences. A commercially available slide/tape program published by Science and Mankind (1984) was used to meet unit objectives. The program was in two parts. Part I discussed major experiments leading to today's model of cell respiration and Part II included application of the theory of understanding cell respiration and energy. The project team devised a worksheet for the program and the State Department purchased a copy for teachers to use. The HOE I competencies for Unit IV included (a) analyze the structure and function of the respiratory system as they relate to the diagnosis and treatment. of major diseases/disorders associated with the system, and (b) analyze cells, tissues, and organs as related to body systems. Objectives were to (a) state the chemical processes involved in cell respiration, (b) name two scientists who contributed to our present model of cell respiration, and (c) explain how different forms of energy relate to each other. Science competencies included (a) understand that the general structural plan of the human body is composed of various systems with specific structures and functions, (b) name and describe the major structures and functions of all the main body systems, (c) understand that life is a chemical process, and (d) understand that the basic unit of life is the cell.

Pin the Part on the Person. Another unit developed for Basic Sciences was Pin the Part on the Person. This learning activity package was designed with individual and group activities to enhance learning anatomy in the HOE I Unit, Body Systems and Functions. The HOE competency for Unit IV of HOE I was to analyze the structure and functions of the body's system as they relate to diagnosis and treatment of the major diseases and disorders associated with that system. Unit objectives were to (a) provide experiences for identification of the structure of the body's major systems and the organs that compose those systems, and (b) present science concepts involving the structure and function of the human body that help to strengthen those concepts taught in HOE. Science competencies were (a) understand that the human body is composed of various systems with specific structures and functions, (b) name and describe the major structures and functions of all the main body systems.. ., (c) understand that the basic unit of living things is the cell, and (d) label and describe the major organs of each major system of the human body. The unit was 20 pages in length and contained worksheets and group exercises.

The Body's First Line of Defense. The final module was The Body's First Line of Defense and was designed for HOE I, Unit IV, Basic Sciences. The unit contained eight pages of worksheets for class discussion. The unit was designed to supplement the teaching unit relating to structure and function of "the integumentary system in HOE I. The HOE competency was to analyze the structure and function of the body's system as they relate to diagnosis and treatment of the major diseases and disorders associated with that system. Unit objectives were to (a) differentiate between objective and subjective observations about the skin, (b) name the main structures and functions of the skin, (c) state the protective functions of the skin, and

(d) identify five diseases/disorders of the skin. Related science competencies were to (a) describe how disease-causing organisms enter the body by water, food, air, skin; (b) name and describe the major structures and functions of all the main body systems, (c) label and describe the major organs of each major system of the human body, and (d) list the major functions of the organs composing the major human body systems.

The project team presented the study and demonstrated the modules for the HOE teachers **at** the annual summer workshop. The State Department provided copies of the modules for each teacher. The modules requiring audiovisual or computer applications were made available on loan to teachers. Each teacher also received a copy of the final report of the study and the list of health occupations **competencies** analyzed for science content.

#### Conclusions and Recommendations

Science skills are essential for successful mastery of the Health Occupations Education **competencies** published by the North Carolina Department of Public Instruction. Mastery of basic skills in science is essential to success in Health Occupations I and II. Health Occupations teachers were anxious for and have used the module designed to assist students in developing the science skills needed in HOE.

Science teachers also need modules which show practical applications of science skills. From developing modules and the matched listing of science and health occupations competencies, the project team identified a number of science skills common to both Health Occupations I and **II**. The modules were disseminated to Health Occupations Education and Science teachers. The team recommended that the State Department fund a more comprehensive study of science competencies common across vocational areas. A major outcome of the

study was that some local education agencies in North Carolina allowed HOE I to be a valid substitute for the additional science requirement for high school graduation.

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CLASSROOM DISCIPLINE: PRACTICAL TECHNIQUES

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Abstract: Classroom discipline is a major concern to teachers, administrators, and the public. This article addresses causes, prevention, and intervention techniques for discipline problems. Causes of discipline problems include a lack of interest in the program, anger, worry, fear, shame, embarrassment, or frustration relating to a physical impairment or learning disability. Effective planning for classroom instruction can help decrease discipline problems. When problems do occur, the teacher should act quickly, be fair and consistent, provide the student with a written plan, and expect a change in behavior.

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Jerry has his head on the desk again. "Jerry, why must you sleep in **class!**" Jerry looks up, hesitates, then responds with "I'm tired of this class. It's **boring!**" What would you do?

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Maintaining discipline is a major concern of teachers, especially new teachers. School administrators often spend a significant amount of their time dealing with discipline problems. Kindsvatter, Wilen, and Ishler (1988) define discipline as "a dynamic set of conditions that exists within students, individually and collectively, the effect of which is revealed in the classroom in terms of order and decorum" (p. 277). A recent Gallup poll showed that discipline in schools was second only to the use of drugs as the biggest problem with which the public schools must deal (Gallup and Elam, 1987).

Cruickshank (1980) examined the effects of maintaining discipline on teachers "Teachers who spend a great deal of time and energy dealing with misbehavior will have little time, energy, or patience left for teaching" (p. 114) Considering the importance of maintaining classroom discipline, it is critical that vocational teachers understand why problems occur, how discipline problems are prevented, and what to do when a problem does occur. After reviewing a number of studies on discipline, Kindsvatter et al. (1988) concluded that "classrooms characterized by a positive climate and academically motivated students are those in which misbehavior occurs infrequently" (p. 276). There appears to be many benefits of effective classroom discipline. The most obvious is that students are free to work in a positive environment which encourages learning and prepares students for expectations of future employers. The teacher not only gains the admiration and respect of students, but avoids becoming burned out from continually dealing with control problems. The school benefits through positive public relations from offering quality vocational programs.

### Causes of Discipline Problems

There may be any number of causes for a given discipline problem. To complicate matters, Brophy and Rohrkemper (1981) report that teachers often blame sources outside their control as causes of discipline problems. Regardless of the source, one of the most common causes of discipline problems that is within the teacher's control is a lack of student interest in the vocational program. When interest drops, students may look for other diversions often resulting in discipline problems. The most common implication for vocational teachers is to plan every minute of every day with relevant, productive, and challenging activities to keep students on task.

Discipline problems may be due to emotional stress resulting from anger, worry, fear, shame, or embarrassment. These emotions could result from student frustration with non-completion of program activities, failing a test, disagreement with another student, worry over paying a laboratory fee, or anxiety resulting from family problems. Students reprimanded in front of others for any reason may feel embarrassed as an emotional reaction. This embarrassment may precipitate a confrontation with the teacher and create a discipline problem. The teacher should avoid placing students in situations that might trigger one of these emotions. Finally, discipline problems may result from physical impairments such as poor hearing or vision. Student frustration may once again trigger an emotion which causes a discipline problem. This also applies to students with undetected learning disabilities. When a teacher believes one of these may be causing discipline problems, it may be necessary to work with counselors and parents to identify corrective strategies.

## Preventing Discipline Problems

Most discipline problems can be prevented. The vocational teacher, through proper planning, can ensure the majority of potential discipline problems never occur. Some techniques for preventive discipline include the following:

1. Begin on the first day of school to establish expectations early as programmatic and institutional policies are presented. Teachers often provide each student with a copy of these policies and ask that they return them with student and parent signatures. Adult students are asked to sign for themselves.

2. Plan effective classroom presentations and laboratory activities for every day. Start each class session on time, plan for the entire period, and keep students on task. Begin teaching on the first day of school .

3. Maintain a well-organized and clean classroom and laboratory.

4. Promote a positive learning climate by providing a comfortable environment using a number of program related posters and signs, maintaining current and interesting bulletin boards, arranging the classroom setting in a horseshoe shape to encourage interaction, using student names as often as possible, and ensuring that the classroom and laboratory are bright, cheerful places to work.

5. Maintain well-organized storage rooms and supply areas. All equipment must be in proper and safe working condition.

6. Arrive in the classroom prior to students and greet them as they arrive.

7. Involve each **student** in every presentation and provide positive reinforcement as often as possible. This reinforcement can be verbal, such

as great answer Michelle, or nonverbal a smile or pat on the back) and given in front of others or in private. It is difficult for a student to be disruptive when that student feels good about a positive relationship with the teacher.

8. Model desirable behavior in terms of attitude, dress, safety apparel, support of the school, enthusiasm, and humor. Students have a tendency to model their **teacher's** behavior.

9. Build variety into instruction by using a number of instructional methods, activities, and evaluation techniques. Take the students on a study trip, invite a guest speaker, use small group and individualized instruction when appropriate, and avoid the same old schedule syndrome that leads to boredom and often to discipline problems.

10. Relate all instruction to the world of work. Show students that the skills and knowledge they are acquiring will help them be successful in their chosen career.

11. Encourage students to assume some responsibility for their learning by allowing them to provide input into the selection of learning activities, vocational student organization events, and break schedules to name a few possibilities. When students begin to develop a sense of program ownership and pride, there will be a decrease in the number of discipline problems.

12. **Exhibit** a positive attitude by maintaining high expectations and being sincere and honest in terms of how students are progressing in their vocational program.

13. Involve parents and guardians in the secondary program. Avoid waiting until there is a problem before contacting parents. Win them over by sending happy gram notes and letters, making home visits, phoning parents to visit about their son or daughter, and inviting them to visit the

program. Then, when parents must be contacted regarding a discipline problem, they are less likely to be defensive and are more likely to work with the teacher to correct the situation.

14. Maintain a positive learning atmosphere for adults. Inform them of their progress frequently and help them to view problems as skills to be developed and not as personal threats.

15. Establish as few rules as possible and develop a program policy or rule only if there is a need. Rules typically focus on dress, entering and leaving the classroom, safety apparel, horseplay, attendance, staying on task, arriving prepared for class, language, submitting assignments, and following directions. State rules from a positive perspective and be very clear about the consequences of inappropriate behavior.

#### When Problems Occur

Even with proper planning, discipline problems may occur. When they do, the teacher should attempt to handle the situation correctly and recognize there is no standard action to follow when a problem occurs. Following are some suggestions of what may be done when a discipline problem does occur. Many of these suggestions are based on information from the National Center for Research in Vocational Education (1980):

1. Avoid sarcasm and ridicule. These **will** only alienate students and create additional discipline problems.
2. Remember that secondary students are in the process of growing up and will make mistakes. Avoid overreacting to a minor incident.
3. Avoid punishing a student in the heat of anger.
4. Collect all information regarding an incident before making a decision.

5. Act at the first sign of a problem. Many teachers wait too long before taking action.
6. Reprimand the student in private.
7. Avoid the use of peer pressure by using group punishment. A more effective use of peer pressure is to reward students for appropriate behavior in front of other students.
8. Be consistent and fair with discipline.
- 9." Attempt to handle most discipline problems, keep the school administration informed, and involve the administration in serious cases.
10. Avoid threatening, arguing, and attempting to bluff students because they may lose respect for the teacher. Also, avoid assigning classwork as punishment. This sends the wrong message regarding the importance of class activities.

#### The Process for Disciplinary Action

The process for disciplinary action should be handled very carefully. The teacher should talk to the student at the first sign of a problem. It is important for the student to understand the teacher is serious regarding the consequences of inappropriate behavior. When an incident occurs, the teacher should follow through by informing the student of the inappropriate behavior and then applying appropriate punishment. This punishment must be consistent, fair, and comply with both program and school policies. To test for this, teachers should ask themselves "what punishment would I use if this were my best student; my worst student?" These questions and the subsequent answers will keep the teacher from being too strict or too lenient.

School administrators often require each teacher to complete a disciplinary action report when an incident occurs. The teacher should

describe the situation in writing and list the specific rules being broken or the objectives not being met. Identify a period of time the student **will** have to improve, the specific way in which the student should improve, and the consequences if improvement is not made. Parents should be informed of the situation and apprised of the disciplinary action being taken.

The teacher should select consequences which are appropriate **for** the incident. Options for vocational teachers include the following:

1. Student conference with the teacher.
2. Parent-teacher conference.
3. Lowering of daily grades based on attitude and time on task.
4. In-school detention.
5. After school detention.
6. Meeting with the **administrator**.
7. Corporal punishment administered following institution policies.
8. Removal of a program privilege (break, hall pass, etc.).
9. Suspension.
10. Expulsion.

#### Due Process

Due process must be followed when a decision has been made that a student is to be dismissed from a program. When the dismissal letter is received, the student may wish to contest the expulsion. The teacher should be aware of the administration's due process policies and follow them explicitly. Students should be aware of due process and be apprised of their rights within the process. **Due process may involve** the following policies:

1. The student is provided a copy of the appeal procedure.

2. If an appeal hearing is to be held, the student is given timely notice so as to have sufficient time to prepare. For English as a second language students, the notice also should be in their native language.

3. An impartial hearing is conducted. A panel comprised of school representatives, program faculty, and other individuals may be appropriate to review the case.

4. The student and school may be represented by counsel. The student also may have legal counsel, parents, and other students speak on one's behalf.

5. During a cross examination period the student must be allowed to ask questions.

6. The student must be allowed to maintain status quo pending **appeal**. The student remains in the vocational program during the appeal process so that if the decision of the teacher is overturned, the student will not have deficiencies to make up. However, if the teacher feels the student may not function safely if allowed in a laboratory or clinical area, the student can spend time in a study area.

7. **The student**, legal counsel, and parents must be allowed to see and review any records or grades pertaining to the student.

Within the school system, the appeal process ends with the school board. However, a student may elect to involve the courts outside the school system.

#### Summary

Cruickshank (1980) presents five principles that can make control less of a problem. These include (a) pursue goals that are appropriate and important, (b) analyze factors that affect problem situations, (c) use

positive techniques for managing behavior, (d) use punishment appropriately and sparingly, and (e) teach students to manage their own behavior.

Health occupations teachers should maintain a positive learning environment by respecting students and using a variety of learning activities to keep them involved. Discipline problems should not be taken personally. It is the student's behavior that is the problem, not the student as a person. When discipline problems occur, act quickly, be fair and consistent, provide the student with a written plan for improvement, and expect a change in behavior. High expectations, planning, and effective discipline will help to ensure the success of both the teacher and student.

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**TEACHER STRESS: CAUSES, STAGES, AND EFFECTS**

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Abstract: This article presents a discussion of teacher stress including a definition of stress, the symptoms of stress, and the cause of stress in the classroom, laboratory, and clinical experiences. The three stages of stress are identified as well as the effects stress has on teachers both at the secondary and postsecondary levels. Also discussed are the reactions to stress and suggestions for alleviation of stress. A recommendation is provided in regards to educating vocational educators, especially health occupations teachers, about stress.

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Vocational educators are being constantly bombarded with more and more tasks and responsibilities. This is particularly true of health occupations teachers who are responsible not only for their classes, but are equally responsible for the behavior of their students in classroom laboratories and other training sites, such as hospitals, nursing homes, primary health care centers, dental offices and laboratories, and physician offices. These individuals must have the assurance that their students have the expertise

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stress and its causes and effects on teachers can be examined, stress must be understood in its basic form. According to Penny (1982), the result is an imbalance between the demands of an environment as opposed to one's capacity to respond (Wangberg, 1982). This imbalance, whether stemming from real or imagined causes, is directly related to one's reaction, either positive or negative, dependent on one's perception and reactions to the demand or stressor.

Stress for each individual is a complexity within itself. If stress is an equilibrium state between the individual and responses to environmental demands, then stressors may be defined as events requiring more than usual adaptive responses from the body. Stressors are commonly associated with a variety of personal, social, and physical events, including interpersonal experiences in schools or classrooms (Fimian, 1982). The human body, however, does not have the capacity to differentiate between the various types of **stressors**. This explains why physical stress cannot be separated from mental stress, just as personal stress cannot be separated from professional stress (Wangberg, 1982). Because individual responses to and discernments of similar situations vary significantly, factors responsible for stress in one person **may** also be responsible for sparking enthusiasm in another (Fimian, 1982; Forbes, 1979; and Pemy, 1982). Moreover, teachers should be aware of some of the symptoms of stress.

### Symptoms of Stress

Symptoms of teacher stress are almost as varied as the individuals themselves. Since stages of stress are related to the symptoms of stress, most stress manifests itself in one of three ways: attitude, physical well being, or performance. A general feeling of dissatisfaction about one's work is a common, low-key indicator of stress. The school may no longer

required to perform technical skills associated with the care of others. Health care educators and administrators must be ever cognizant of the activities in which teachers are involved and which may produce stress. Questions pondered year after year may include but are not limited to those listed below:

1. Are sensitive, dedicated teachers leaving their profession because of an increasing number of assignments associated with teaching?

2. Are decisions to vacate classrooms based upon the inability of individual teachers to cope with stressors that have become synonymous with teaching, such as large class sizes, disruptions, low salaries, increasing amounts of paperwork, lack of materials, and violence?

3. Are teachers simply lacking the intrinsic rewards that they once envisioned from their careers?

4. Is there something fundamentally wrong in educational environments, causing a low morale which may possibly lead to stress among the teaching force?

Stress, although not necessarily a negative force, is an integral part of life. Reaction to various stressors is directly correlated to the effects stress has on individuals. Too little stress yields boredom; yet, too much stress has the potential for producing serious physical and mental disorders (Wangberg, 1982). The spectrum of stress is almost infinite and ranges from energizing to depletion, known as burnout (Fimian, 1982; Forbes, 1979; and Penny, 1982).

#### Stress: A Definition

Stress as defined by Random House Thesaurus (Stein & Flexner, 1984) is "strain, tension, anxiety, and force." Whereas, Jones and Emanuel (1981) raised the question: Is stress another term for teaching? However, before

seem to be a friendly environment (Jones & Emanuel, 1981) and a feeling of being isolated from the real world may ensue (Fimian, 1982; Jones & Emanuel, 1981). Teachers may worry in excess, become anxious over routine matters, or blame others for their problems. A direct result is that teaching priorities change from one of placing the most importance on learning to one of self-survival. Classroom performance and methodology are given a somewhat lower priority (Fimian, 1982; McMillen, 1987; and Penny, 1982). Thus, secondary and postsecondary teachers should be aware of some of the personal and professional factors which cause stress.

#### Stress Related to Personal Factors

Personal **stressors**, despite their intensity, have to be dealt with in the life of each teacher. It may be as simple as balancing a checkbook or wearing a pair of shoes that hurt to more severe **stressors**, such as death, divorce, or accident (Block, 1977). A teacher's perception of the capacity to communicate either socially or professionally is closely related to feelings of frustration (Wangberg, 1982). When personal stress becomes coupled with other types of stress, the main health problem among teachers may be stress related (Block, 1977).

#### Stress Related to Professional Factors

Professional **stressors** among secondary teachers tend to be divided into four basic sources: (a) working conditions, (b) professional responsibilities, (c) student teacher situations, and (d) student discipline. These topics are discussed in the following sections.

Working conditions. Because self-fulfillment is thought to be the ultimate satisfier for most teachers, many attempt to relieve some tension associated with poor working conditions. By creating pleasant environments within their classrooms, these individuals are striving to satisfy a need

for belonging and self worth. A problem with this theory arises, however, in view of today's educational systems. While teachers have continued to be involved despite low pay scales and less than satisfactory working environments, their enthusiasm has been dampened by overloads of paper work and oversized classes. Furthermore, evaluation has become a threat instead of an instrument for helping teachers grow professionally (Krupp & Dempsey, 1982; Penny, 1982).

Individuals in health related fields are acutely at risk for stress. In addition to the normal stressors such as keeping track of tremendous volumes of paper work that other teachers face, health occupations teachers, particularly at the postsecondary, level must prepare their students to deal with potential life-threatening situations. Health occupations educators **must** be able to assure those who work with their students that the students are capable of performing skills required under the necessary conditions. In essence, these teachers are not only responsible for their performance as educators, but for the performance of their students as well.

Professional responsibilities. In addition to low salaries, limited professional advancement opportunities exist at the secondary level. A disheartening scenario evolves when the relationship between professional preparation, length of the work day or week, and complexity of services rendered and individuals served is compared with pay scale and promotion potential in most school systems. Also, often lacking is incentive in the form of recognition for good work; therefore, the development of any sense of pride in their work or any degree of achievement often becomes the responsibility of the individual teacher (Kaiser, 1982; Penny, 1982).

Few opportunities are afforded teachers, even those who have preparation periods, to recuperate from daily activities (Alschuler, 1980).

Although classrooms may be lacking adequate materials, teachers are expected to maintain quiet classrooms while remaining apprised of recent announcements, fire drill procedures, field trips, and student absenteeism. These tasks are expected to be performed besides the routine duties associated with teaching (Styles, 1977). Frequently, safety against physical assaults is not afforded teachers (Jones & Emanuel, 1981), especially in inner city schools. Block (1977) cites numerous examples of cases in which teachers are attacked, beaten, or abused either while teaching or performing a job related activity. The same individuals either receive a reprimand for not being in control of these situations or are warned against talking about the incident. In either situation, no support is given to the battered teachers who are threatened verbally or are robbed (Block, 1977).

Teaching responsibilities, also sources of stress among the educational work force, are thought to be due, in part, to the fact that teachers have little input into administrative decisions (Fimian, 1982). Although tangible rewards are few, teachers are expected to perform too many tasks and responsibilities in too little time. These tasks include too many classes, large classes, supervisory duties, activities after school, mixed ability groups, and administrative paperwork (Penny, 1982). Teachers often work with students numbering more than 150 per day with each student having different learning styles, personalities, problems, and potentials (Altschuler, 1980).

Student-teacher situations. Another source of stress is student demands on teachers' time. Essentially there are two categories of student related stress: student-teacher relationships and discipline problems. Relationships between students and teachers are an essential part of the

educational process, particularly at the secondary level. The knowledge that individual needs of each student cannot be met is a primary ingredient in teacher-related stress. Declining relationships with students coupled with frequent changes in curricula and teaching methods become additional stressors to already frustrated teachers (Styles, 1977).

Student discipline. Student discipline is *also* a constant source of teacher stress. Every day each teacher faces as many as 30 to 60 interruptions in each class. Encounters with students which range from asking irrelevant questions and talking with other students to throwing things and insulting others add to feelings of helplessness. These actions **may** account for **50%** of instructional periods being devoted to correcting behavior problems (Alschuler 1980). Poor attitudes among students, lack of student motivation and inadequate support from administration are frequently cited as contributing factors to teacher stress (Penny, 1982). **Feitler** and Tokar (1982) found that the few students who chronically misbehave produce greater levels of stress than general behavior problems.

#### College Faculty Stress

Although college faculty may face similar stressors that secondary teachers deal with, these individuals experience a type of stress unique to university positions. Stress related to work and high expectation is discussed in the following sections.

Work-related. University level faculties feel the time pressure as they attempt to juggle preparing for classes, conducting research, writing manuscripts, and planning, organizing, implementing, and evaluating preservice and inservice workshops, seminars, and conferences. The consequence **is** very little time left for family, thereby causing stress levels to continuously rise (McMillen, 1987).

Specifically, the stressful nature of academic careers is linked to tougher competition, lessened mobility, limited resources, and growth in part-time positions. As the standards for promotion and tenure become more stringent, travel and departmental funds are often reduced. This means fewer sabbaticals and research grants are awarded. Faculty members at this level have even fewer opportunities for job change than their secondary counterparts. This is due to an increase in part-time positions being created at the expense of tenure-track positions being eliminated. Professors, hence, feel imprisoned in their work (McMillen, 1987).

High expectations. In addition, extremely high expectation of university faculty by both the individual and the university system lead to higher levels of tension. Professors are usually perfectionists and are trained to be critical. **As** a consequence, the tone in academic arenas tends to become negative. Levels of individual expectations rise sharply as competition among colleagues becomes extremely keen and self-evaluation is most acute just prior to decisions concerning tenure and promotion. However, stress does not end with the granting of tenure. With tenure come additional pressures to maintain a hard-won reputation. Such tension is especially difficult for women who often shoulder the burden of raising a family (McMillan, 1987).

#### Stages of Stress

Literature indicates that three distinct levels, or stages of stress exist. Each stage becomes progressively more difficult to handle. The three stages are referred to as (a) alarm stage, (b) resistance stage, and (c) exhaustion stage. These stages are explained in the following sections.

Alarm stage. The first stage, the alarm stage, is signaled simply by an awareness that **stressors** exist. Feelings of uneasiness or tension are

usually indicative of this stage. If allowed to proceed unimpeded, this leads to feelings of helplessness, rejection, and dissatisfaction (Jones & Emanuel, 1981). The occurrence of weak **stressors** may be so subtle that an individual may not be aware of their initial existence. Psychological or physical ailments associated with this stage of stress may include sudden nervousness, irritability, or frequent headaches (Fimian, 1982).

Resistance stage. The second stage, the resistance stage, is to endure the stress until it progresses into a state of exhaustion. Commonly associated with this stage of stress are coping strategies. A teacher experiencing this type of stress usually employs one of the following coping strategies: (a) flee the situation or (b) tolerate the situation until a more advanced stage of stress develops. If the former strategy is employed, a victim may put things off indefinitely, avoid the issue, or simply ignore the problem. Or, if the latter strategy, better known as passive coping, is put into place, the victim may identify the problem but do nothing about it for a variety of reasons. The danger of this method lies in the fact that the **symptoms** of stress are dealt with, but the root of the problem causing the stress is ignored. This can lead to more extreme coping measures such as alcohol or drug abuse (Fimian, 1982).

Exhaustion stage. The final and most serious stage is the exhaustion stage. This stage is better known as the burnout or breakdown stage. The individual no longer has the physical or psychological reserve wherewith to fight. Extreme ailments, such as ulcers, migraine headaches, and varying degrees of depression are typical (Fimian, 1982).

#### Reaction to Stress

The reaction of an individual to a stressed situation is the determining factor in the manner that stress manifests itself. Severity for

each parallels the coping capacity of each individual. An activity or situation that produces opportunity for one has potential for producing stress for another (Forbes, 1979). This could provide the reasoning for younger teachers experiencing a different type of frustration than more seasoned teachers, for male teachers having negative feelings more frequently than **females**, or for high school teachers feeling more negatively toward their students and career than their postsecondary counterparts (Feitler & Tokar, 1982; Schwab, 1982).

### Alleviating Stress

Reducing or alleviating stress begins with awareness of factors that are most prone to causing stress. Teachers should be continuously aware of early symptoms of stress. Situations that yield high stress levels should be avoided. Teachers, who fear evaluations, cover the greatest possible amount of material, or feel overwhelmed with deadlines, are more subject to stress. Self-expectations often become increasingly difficult to meet. Some teachers habitually overextend themselves and deliberately place themselves in high stress situations. The result is stress (Fimian, 1982).

### Summary

Teachers, especially health occupations teachers, are being given more and more responsibilities today in the classroom as well as in the clinical experience with their students in the **health** care agencies. With these increasing stressors, educators, and administrators must ever be cognizant of response behavior in the teaching and clinical environment, and constantly observe actions, reactions, and performance of not only their own but their subordinates. Administrators, as well as individual teachers, should be continuously raising questions such as: Are teachers leaving the

classroom for other jobs? Are teachers lacking intrinsic rewards? What can be done to assist in alleviating problems of stress?

As the definition of stress is explored, one author reported that it is an imbalance between the demands of an environment as opposed to one's capacity to respond (Wangberg, 1982). Moreover, this imbalance, whether stemming from real or imagined causes, is directly related to **one's** reaction, either positive or negative, dependent on one's perception and reactions to the demand or stressor.

Stress related to professional factors include working conditions, professional responsibilities, student teacher situations, and student discipline. College faculty stress seems to center around work related and high expectations that are both self and university imposed. These factors coupled with family or personal factors can increase tension and add to the **stressors** in the work environment.

Stages of stress include the first stage, or alarm stage, which is simply an awareness that stressors exist. The second, or the resistance stage, is to shoulder the stress and use coping strategies such as tolerating or escaping stressful situations. The third stage is the exhaustion stage, better known as burnout or breakdown stage. At this point the individual no longer has the physical or psychological reserve to fight. As a result, medical problems such as headaches, ulcers, and varying degrees of depression may be evident.

The severity for each stage of stress parallels the coping capacity of stress for each individual. A situation that produces stress for one teacher may yield an opportunity for another. Different types of frustration may be evident in young teachers versus seasonal teachers as well as males versus females.

The symptoms of stress as explained vary from one to another and are related to the various stages. However, stress manifests itself in one of three ways: attitude, physical well-being, and performance. Health care teachers, administrators, and educators should be continuously aware of the early symptoms of stress, and if possible, avoid those situations which yield the high stressors and/or learn effective coping strategies through stress-related workshops, inservice, or special courses.

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The Health Care Worker: An Introduction to Health Occupations. 2nd Edition. Shirley A. **Badasch** and Doreen S. Chesebro. Prentice-Hall, Inc., **Englewood Cliffs**, 1988, 365 pp.

The Health Care Worker provides a global view of knowledge and attitudes required of health care workers functioning in a variety of settings. The text is organized into two parts. Part 1, consisting of 13 chapters, contains fundamental knowledge, attitudes, and skills basic to paraprofessional **health** fields. Part 2, consisting of 11 chapters, explores 11 health occupations and is used with the Student Procedure Manual which details procedures with check-off lists, enhances the text's content, and reinforces student learning.

Strengths of the text include behavioral objectives and a vocabulary list of new terms at the beginning of each chapter, colored pictures of body systems, many drawings and pictures to enhance learning, a **summary** at the end of each chapter and a glossary. In addition, chapters in Part 2 include a review section which refers students back to appropriate **chapters** and objectives in Part 1 and a duty or task section which lists the skills required for the worker in this field. It would be helpful to have review questions at the end of each chapter.

The Student Procedure Manual should be required as noted by the authors. The Instructor's Guide for the Health Care Worker is a valuable resource as it provides presentation content, suggested activities, additional resources, and unit evaluations.

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Contemporary Practical/Vocational Nursing. Corrine R. Kurzen. J. B.

Lippincott Company, Philadelphia, 1989, 286 pages.

Contemporary Practical/Vocational Nursing is an excellent introductory textbook for students who have selected a career in practical nursing. The content provides the neophyte practitioner with insight into the world of nursing. Chapters one and two suggest strategies for adjusting to student life, develop the basic concepts of communication and discuss the personal, physical, and psychological needs of the student nurse *as a person*. Chapters three through five present a historical overview of nursing, requirements for practical nursing program and **licensure**, and nursing theory and process.. Chapters *six* through eight describe the present health care system; patient care team members; and religious, cultural and ethnic differences of patients. Chapters nine and ten discuss ethical issues and legal responsibilities of practice. Chapter 11 defines effective leadership qualities, management skills, group membership dynamics, and the political process. Chapters 12 and 13 explain career opportunities, current issues, and future concerns.

**The** behavioral objectives, discussion questions, and **learning** activities of each chapter motivate and challenge students. Dedicated faculty can use this resource with its accompanying instructor's manual to guide and encourage the development of students as vitally important members of the health care team.

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