

Journal of Health Occupations Education

Volume 10, Number 1

Spring 1995

Journal of Health Occupations Education

Editor: Beverly Richards, R.N., D.Ed., Associate Professor, Box 7801, Health occupations Education, College of Education and Psychology, North Carolina State University, Raleigh, NC 27695-7801.

Associate Editor: Terrance O'Brien, Ph.D., Associate Professor, Marketing Education, College of Education and Psychology, North Carolina State University, Raleigh, NC 27695-7801.

Managing Editor: Beverly Richards, R.N., D.Ed., Associate Professor, Box 7801, College of Education and Psychology, North Carolina State University, Raleigh, NC 27695-7801.

Editorial Board

Duane Akroyd, R.T. (R), Ph.D.
Health Occupations Coordinator
North Carolina State University
Raleigh, NC 27695

Shirley Baker Loges, M.T., Ph.D.
1711 Avenue J.
Nederland, TX 77627

Richard Bamberg, Ph.D.
University of Alabama, Birmingham
School of Health Related Professions
University Station
Birmingham, AL 35294-3361

Joyce Brandt, R. N., Ph.D.
Consultant
University of Iowa
Iowa City, IA 52242

Beverly Cochran, R. N., M. Ed.
Instructor, Practical Nursing
Troup County AVTS
LaGrange, GA 30240

O. J. Drumheller, R.T.(R)
Orange County Schools
434 N. Tampa Ave.
Orlando, FL 32805

Karen Gable, RDH, Ed.D.
School of Allied Health
Indiana University
Indianapolis, IN 46202-5119

Helen Gabriel, EDDA, BVE.
Dental Auxiliary Director
Mesa College
Grand Junction, CO 81501

Paul Hoeksema, Ph.D.
Professor Allied Health Education
Ferris State University
Big Rapids, MI 49307

Patricia K. Leitsch, Ph.D.
School of Education
University of Louisville
Louisville, KY 40292

Mildred Pitman, R. N., Ed.D.
Consultant
110 S. Meadow
Sanger, TX 76266

Joseph Polansky, Jr.
Health Occupations Consultant
P.O. Box 7874
Madison, WI 53707

Karen Rumpf
2416 Kirkwall Court
Orange Park, FL 32065

Chet Rzonca, Ed.D.
Associate Professor
University of Iowa
Iowa City, IA 52242

Janice Sandiford, R. N., Ph.D.
Associate Professor
Florida International University
Miami, FL 33181

Norma J. Schira
Associate Professor
Western Kentucky University
Bowling Green, KY 42101

J. Carol Southern, R. T.(R), Ed.
East Alabama Medical Center
2000 Pepperell Parkway
Opelika, AL

D'Ann Wilson, M.A.
Instructor, HOE
Parker High School
Birmingham, AL 35202

Dorothy Witmer, R. N., Ed. D.
Health Occupations Education
U.S. Supervisor
Division of Vocational Ed.
650 West Sate St.
Boise, ID 83720

Journal of Health Occupations Education

spring	Volume 10, Number 1	1995 Page
Editor's Note		ii
Allied Health in Tennessee: A Supply and Demand Study		1
Kaylene A. Gebert and M. Jo Edwards		
Institutional Goal Priorities in Texas: A Look at an Associate Degree Nursing Program		17
John E. DeLeon		
Multiskilling: The Quiet Revolution in Healthcare Education and Training		39
Jenny Auger Maw and Catherine M. Sleezer		
Developmental Experiences and Critical Competencies of School Restructuring Leaders		54
Terrance P. O'Brien and Rebecca R. Reed		
Helping Students Learn and Learn How to Learn in the Context of Health Occupations Instruction		82
Kenneth A. Kiewra and Dorothy Witmer		

General Information

Inside front and back covers

ISSN 0890-6874

Editor's Note

This issue of the Journal offers a model for assessing current supply and future employment projections of allied health professionals, examines the current and preferred importance of institutional goals in an associate degree nursing program from four constituent groups, provides a case study describing the use of **multiskilling** and patient-focused care in one health care organization, describes restructuring leaders' reactions to mandated site-based management, and uses learning principles to teach students how to learn.

Gebert and Edwards describe the employment status of various **allied** health professions at the national and regional levels. Specific to the state of Tennessee, the authors provide information on the current supply of allied health professionals, areas of identified need, and employment projections for 25 occupations grouped into seven major categories. The study provides a model for similar longitudinal studies which could be initiated by other interested states.

DeLeon found that nursing and allied health occupations are expected to account for 54,000 of the projected 10.3 million jobs available in the Texas workforce in the year 2000. The author examines the current and preferred importance of institutional goals among four community college associate degree nursing constituent groups: advisory board members, college administrations, faculty, and final semester students.

Maw and Sleezer explore the topic of **multiskilling** in (a) **healthcare** trends that drive the need for **multiskilling**, (b) perspectives from the **multiskilling** literature, and (c) a case study describing the use of **multiskilling** and patient-focused care in one organization. They depict **multiskilling** as a strategy to lower costs, facilitate collaboration among health care providers, and increase patient satisfaction.

O'Brien and Reed investigate changes that had occurred in three school systems in response to state legislation mandating site-based management. Using a qualitative approach the authors interviewed 38 restructuring leaders located in central North Carolina. Their findings have implications for teacher and administrator preparation programs in institutions of higher learning.

Kiewra and Witmer examine learning principles to help teachers design instruction consistent with the ways students should learn. By using these learner-compatible methods, teachers teach students how to learn. Producing learners who can learn is an important part of preparing health occupations students to meet the expectations and demands awaiting them as health care providers.

I apologize for the delay of publication of this issue. The Journal is still in transition to another editor.

Beverly Richards
Editor

Allied Health in Tennessee: A Supply and Demand Study

Kaylene A. Gebert¹

M. Jo Edwards

Abstract: Health reform is a continuing state and national issue, and demands will increase for various health care disciplines at varying levels of training. In Fall 1992, the Tennessee Board of Regents System (TBR) appointed a task force to conduct a study that would provide data and information to assist institutions and the TBR in making responsible decisions relative to programming in allied health. This study describes the employment status of various allied health professions at the national, regional, and Tennessee levels, provides current supply information for Tennessee, identifies areas of need, and gives Tennessee and national employment projections for twenty-five occupations grouped into seven major categories. Tennessee has fewer allied health care workers in most categories when compared to the nation, as well as significant shortages in several areas. State institutions are using this baseline data in institutional program planning. The study provides a model for similar longitudinal studies that could be performed by communities of interest.

¹Kaylene A. Gebert, Ph.D., is Assistant Vice Chancellor for Academic Affairs; M. Jo Edwards, Ed. D., is Adams Chair of Excellence in Health Care Services; Middle Tennessee State University, Murfreesboro, TN.

Introduction

Allied health services have significant implications for the quality of health care for Tennessee citizens. Allied health education is a high cost program area compared to many other curricula. In times of fiscal constraint, changing demographics, and increased use of technology, public post-secondary institutions must plan carefully to meet expectations for improved health care. This article describes the rationale, methodology, and findings of a state-wide assessment of allied health manpower in Tennessee.

To assist its institutions and the Tennessee Board of Regents (TBR) System in making responsible decisions relative to programming, the Chancellor requested a study on allied health. In December 1993, a state-wide task force of allied health faculty and staff completed and disseminated the final report.

The Tennessee Board of Regents is the sixth largest postsecondary governing system in the US, including six universities, 14 two-year community colleges, and 26 technology centers, serving over 165,000 students. TBR has responded to demands for more health care professionals, and since 1989, both enrollments and the number of graduates from health programs have nearly doubled. Much of this growth has occurred at the two-year institutional level.

In the allied health area, TBR offers more than 70 accredited allied health programs at all levels, from technology centers to two-and four-year schools. These programs are both credit and non-credit and range from certificate to doctoral levels. Some programs are based on a partnership model with clinical instruction delivered by other educational and medical institutions outside TBR.

The allied health field is multi-disciplinary, and the choices of scope and methodology for effective manpower studies vary. Allied health supply and demand data are not always comparable for the various professions, and some sources of data are not widely available. The format and data used for this study may be a useful model and provide baseline data as institutions research occupational supply and demand prior to developing new or modifying current programs.

Allied Health in Tennessee: A Supply and Demand Study (TBR, 1993) was made generally available to those involved in the education, training, and employment of allied health professionals. The report has eight sections and describes the employment status of various allied health professions at the national, regional, and state levels. It provides current supply information at the state level, identifies areas of need, and gives general Tennessee and national employment projections.

The study includes a status summary of the allied health occupations studied, provides a description of the category, describes briefly the educational preparation for the occupations, reviews supply and demand information, identifies post-secondary educational programs in Tennessee, and summarizes the section. References and seven appendices are also included in the final report.

Methodology

As the Institute of Medicine (1989) study noted, the allied health field “comprises occupations with varying labor market characteristics, ” including levels of education and responsibility, work sites, paths of entry, wages, and job titles and descriptions; therefore, each occupation must be considered separately. The diversity of the fields and the lack of

federal investment in establishing national databases contributes to the lack of consistent national data (IOM, 1989, p. 445). A hierarchy of methods and models described by Wing and Salsberg (1992) recommends the kind of simple, straight-forward analysis and data collection used as a basis of analysis in the Tennessee study. Justification of any program requires more detailed projections and analysis.

Like the IOM (1989) study, this study (a) used primarily existing data, (b) selected several allied health fields to study in depth, (c) identified demand rather than need in looking at health care, (d) and took into account general trends and the available data. The data was used to make recommendations for programming.

The report covered selected occupations in the allied health field which were grouped into seven occupational categories: medical imaging, health care (medical) therapy, health information management (medical records), clinical laboratory services, dental services, medical assisting, and emergency medical services. Public health, health services administration, opticians, community health education, nutrition, dietetics, recreational therapy, music therapy, cardiopulmonary technology, orthotic/ prosthetic, pharmacy assistant, substance abuse, and environmental health are areas that may be considered allied health, but are not included in this study. Pre-professional categories were not included.

The study was limited to Tennessee and incorporated data from a variety of organizations, including Tennessee post-secondary systems, the Tennessee Higher Education Commission, individual institutions, local practitioners, accrediting bodies, state regulatory agencies and departments, national agencies and reports, allied health professional organizations, and other allied health supply and demand studies.

Projected growth was predicted in some occupational areas; however, factors such as repayment systems, federal legislation, and level of access that are used to predict future growth continue to change rapidly. For example, federal legislation is expected to change the ability of the public school system to use baccalaureate-prepared speech disorders graduates, thus increasing the demand for master's level training.

Description of Supply and Demand Data Types

The committee used a variety of existing data sources and a survey of local clinics and practitioners as the basis for its assessment of demand. All the data sources in supply and demand studies have both strengths and weaknesses. To increase reliability and validity, a variety of sources were considered and conclusions based on the aggregate information found within an occupation and across several occupational areas. The following sections describe the seven major data types used.

I. Population Ratio Data

A simple extrapolation model, health care personnel to population, was applied to determine the ratio of current health care personnel to the Tennessee population. The Bureau of Health Professions of the U.S. Department of Health and Human Services uses this method to project use of health care services. The study emphasized population ratios as a means of comparing Tennessee to national and regional figures to provide a more consistent benchmark across occupational areas. Assuming a Tennessee goal of meeting national averages as an outcomes measure, these data identify underserved areas.

Table 1 shows population ratio data for several allied health occupations in Tennessee. Ratios comparing the number of professional level practitioners to the technical level were also calculated and compared to national ratios.

2. Statistical Projections of Populations

The Bureau of Labor Statistics' (BLS) projections are grounded in projections of the entire U.S. economy which include estimates of workforce and economic activity. BLS uses a consistent methodology across occupations; thus, the allied health occupations can be compared with each other and in context with all other occupations for which projections have been made. Grouping of some occupational categories limits the use of these comparisons. This methodology is also used by the Tennessee Department of Employment Security.

3. Vacancy Rate Data

According to the IOM (1989) study, the most commonly cited indicator of a labor shortage is job vacancies, and a large number of vacant positions or a high ratio of vacancies to total employment is taken as evidence of a shortage. Vacancy rates, however, are not reliable indicators of job opportunity in that the highest rates often occur in occupations with the highest turnover, due to stress, low pay, or cyclical employment patterns. Additionally, consistent shortages may also drive the market to alternate operations, such as the increased use of contractual services or technical level personnel.

The American Hospital Association has initiated three surveys of human resources to "build a data base for use in strategic manpower planning and provide states with compara-

Table 1

Numbers and Population Ratios of Professionals in Selected Allied Health Professions: U.S. and Tennessee
Based on 1990 U.S. Census Data

Profession	U s .	Per 100,000	TN	Per 100,000	Practicing Ratio*	
					U s .	TN
Medical Technology	87,222	35.0	1,818	37.0		
Medical Laboratory Technician	23,209	9.3	742	15.2	.26	.4
Occupational Therapist	44,174	17.8	378	7.75		
Occupational Therapy Assistant	11,232	4.5	186	3<8	.25	.5
Physical Therapist	116,573	46.8	1,741	35.6		
Physical Therapy Assistant	21,603	8.6	650	13,3	.19	.37
Registered Respiratory Therapist	47,764	19.2	1,040	21.3		
Certified Respiratory Therapy Technician	61,996	24.9	1,437	29.3	1.29	1.37
Medical Record Administrator	13,346	5.4	350	7.1		
Medical Record Technician	23,412	9.4	548	11.2	1.75	1.57
Radiographer	184,648	74,2	3,907	80.0		
Nuclear Medicine Technologist	11,022	5.6	247	6.7		
Radiation Therapist	8,679	3.5	161	3.3		
Population	U. S.: 248,709,873		TN: 4,877,185			

* Practicing Ratio compares the number of assistant-level practitioners to the number of professionals practicing in the state and nation expressed as a ratio

tive data.” The 1991 survey covers 26 occupations and presents the gathered information by state, occupation, and region.

The American Hospital Association defines a shortage as a vacancy rate of 7% or more (Kreml, 1992), and the committee adopted the 7% vacancy rate criteria for this study. Other databases were used for professions where hospital employment is not a major factor.

In January 1993, a survey of selected medical clinics in Tennessee was conducted by the Board of Regents to collect local employment data for allied health professionals (Table 2). The survey requested numbers of full- and par-time staff employed and vacancies for each occupation identified in the study. Survey data generally confirmed other sources with regard to shortages.

4. State Employment Data

State surveys based on employment by occupation are collected from employers by a questionnaire. Over time, employers may adjust to market conditions and in some ways adjust their demand requests to their perceptions of the marketplace supply. Differences in processes, equipment, the way work is organized, and the availability of less well-trained workers alter the ways employers complete these surveys.

In Tennessee, the Occupational Employment Statistics (OES) program is a three-part program administered by the Tennessee Department of Employment Security, Division of Research and Statistics, to provide current and projected occupational employment information and expected average annual openings figures. First, a statewide stratified survey of Tennessee employers is conducted over a three-year period. These data are

estimates based on trends and do not take into account unusual economic conditions or business cycles.

Second, staffing patterns were developed which represent the proportion of specific occupations that are likely to exist in particular industries. Staffing patterns are based on statewide data and do not reflect regional variations. Finally, industry employment projections are statistically developed using single and multiple regression.

The supply data generally include trained workers who were employed or are seeking work, and only includes information from public institutions. Supply figures should be adjusted upward for programs where significant numbers of graduates are being produced by private sector schools.

5. Educational Data

The Southern Regional Education Board (SREB) Dat-Ex is an inventory of health and human services education programs. Though focusing on the 15-state region, the database also includes some national data.

The Tennessee Higher Education Commission (THEC) Student Information System [SIS] data provides information on public post-secondary program graduates. This information is provided by the higher education systems to THEC.

6. Licensure Data

This data is provided by the Tennessee Division of Information Resources. Certification and registration data for which national registration is required for practice often provided the best source of national and state levels of personnel in the different areas.

7. Professional Association Data

Sources of data for the supply of allied health workers include membership data from allied health associations. For fields that are well-defined and have a single route of entry, the association data provides a good estimate. For many allied health fields, however, association member data was incomplete or nonexistent. Another source of data on new graduates and accredited academic programming is the CAHEA directory, which included 24 allied health field occupations in 1993.

Report Findings

Each occupational area covered by the report included a status summary, a description of the category, the educational preparation for the occupations, supply and demand information at the national, regional, and state levels, identified public postsecondary educational programs in Tennessee, and a summary. The major findings for each occupational group follow.

Medical Imaging

Diagnostic radiologic technology, radiation therapy technology, nuclear medicine technology, and diagnostic medical sonography.

- * Tennessee's radiography programs are adequate to meet current and projected needs.
- * Radiation therapy programs will need to be reviewed in order for graduates to qualify for national registration in the year 2000.
- * Currently approved programming will reduce the demand in the nuclear medicine area.
- * An entry-level sonography program should be considered.

Health Care (Medical) Therapy

Audiology/speech pathology, occupational therapy, occupational therapy assistant, physical therapy, physical therapist assistant, respiratory therapy, and respiratory therapy technician.

* Tennessee needs more master's-level speech pathologists. The supply of audiologists is currently above the national average.

* Tennessee demonstrates a shortage of physical therapists.

* Tennessee appears to be producing an adequate number of physical therapist assistants.

* More occupational therapists are needed, but approved new state programming will basically meet the need for occupational therapy assistants.

* In both levels of respiratory therapy care, Tennessee is comparable to national population ratios.

Health Information Management (Medical Record)

Medical record administrator, medical record technician, and transcriptionist.

* This area will have the second highest projected growth rate of all allied health professions.

* When current medical record administration occupations programs reach capacity, state supply and demand should be reassessed.

* Consideration should be given to state-wide distribution of medical record technician programs.

Clinical Laboratory Services

Medical technologist, medical laboratory technician, and phlebotomist.

- * National hospital vacancy rates are increasing.
- * Regional figures reflect decreasing numbers of graduates, but Tennessee's ratio of graduates per 100,000 population is slightly above SREB averages.
- * Regulations to be implemented in 1994 are expected to change the minimum requirements of medical Laboratory technicians from certification to an associate degree.
- * Tennessee's vacancy rates are lower than most other SREB states.
- * Tennessee's demand is slightly higher for medical laboratory technicians than for medical technologists, but current programs in both areas are below their statewide program capacity.

Dental Services

Dental hygienist, dental laboratory technician, and dental assistant.

- * The population ratios of Tennessee dental services personnel to dentists compare favorably to national ratios.
- * The demand for dental assistants should be addressed by additional programming.

Medical Assisting

Surgical technician, medical assistant, and nursing assistant

- * Demands for medical assisting personnel will continue.
- * Increases in surgical assistant programs have contributed to meeting yearly expected demand.
- * Demand for medical and nursing assistants is high, and positions can be filled by persons with varying educational backgrounds.

* Additional medical assisting programming should be considered.

Emergency Medical Services

Emergency medical technician (basic, intermediate, and paramedic).

* Tennessee depends less on volunteer medical emergency support personnel than many other states.

* Tennessee has reached a balance between supply and demand in the emergency medical services area.

Conclusion

Allied Health in Tennessee: A Supply and Demand Study (TBR, 1993) shows that recent academic programming initiatives by TBR and others are addressing some of the critical programming needs in allied health. Tennessee has fewer allied health care workers in most categories when compared to the nation, and consideration must be given to providing additional programming, especially in occupational areas where rapid growth is predicted in the next ten years. Practitioner to technical assistant ratios were calculated and indicated that Tennessee has a higher ratio than exists nationally in the areas of physical therapy, occupational therapy, clinical laboratory sciences, and respiratory care. These ratios may be reflecting program growth in two-year institutions, and the implications of the effect of these ratios in practice should be studied further.

The supply and demand information presented in the report is relevant, but labor market factors such as demand are only one part of the academic program planning and decision making process. Allied health programming must be evaluated in the context of an institution's overall mission. In addition to the mission, a number of factors must be

analyzed and considered, including a variety of academic programming needs; student interests; the availability of qualified faculty; accessibility to appropriately equipped classrooms, laboratories, and clinical education sites; accreditation fees and other recurring costs; and the program mix of the institution.

Demand, if expressed as need, quickly becomes a qualitative question. For example, how many respiratory therapists are needed to provide a quality level of health care for Tennesseans is a different question than how many respiratory therapy positions are currently available.

Quality issues, such as the lack of professional education or the average number of professionals per capita, need to be addressed. Generally these issues are best confronted at the local or community level, and in those instances, the local educational institutions are often best equipped to assess that need through local surveys or other assessments of specific occupational demand.

Severe shortage areas in Tennessee are reflective of shortages at the national level and include physical therapy and occupational therapy. Areas where additional programming could be considered include entry level sonography, master's level speech pathology, medical record technology, dental assisting, and medical assisting.

While changes in health care coverage and insurance reimbursement could change these assumptions, current programming is projected to meet the demand in the areas of radiography, nuclear medicine, radiation therapy technology, audiology, physical therapist assisting, occupational therapy assisting, respiratory therapy care, medical record

administration, clinical laboratory services, dental hygiene, dental laboratory technology, and emergency medical services,

In Tennessee, public institutions are providing large numbers of these allied health care providers and, with the rapidly changing context of health care reform, educational institutions and systems will need to employ a variety of sources of data as they review and plan academic programming in the allied health field.

Other states may benefit from similar studies and could compare their findings with the Tennessee status summaries. In addition to state-wide use, a review of several state studies could assist in developing a regional or national database.

In Tennessee, the publication of this study has resulted in consideration of additional allied health programming by institutions, fostered specific conversations among institutions regarding program need, provided specific baseline data and information which serve as a common base for discussion, and contributed to dialogue about the timing of a follow-up study which would show progress or continuing need. While the Board of Regents could sponsor additional studies, the opportunity exists for a coalition of allied health educators, employers, allied health care providers, and allied health care professionals to develop and support a longitudinal assessment of allied health needs in Tennessee.

References

- Institute of Medicine, National Academy of Sciences. (1989). Allied health services: Avoiding crises. Washington, DC: National Academic Press.
- Kreml, B. (1992). Survey of human resources -1991. Chicago, IL. American Hospital Association.
- Tennessee Board of Regents. (1993). Allied health in Tennessee: A supply and demand study. Nashville, TN: Vaughan Press.

Wing, P., & Salsberg, E. (1992). Data systems to support health personnel planning and policymaking. Albany, NY: New York State Department of Health.

Institutional Goal Priorities in Texas:
A Look at an Associate Degree Nursing Program

John E. De Leon¹

Abstract: Trends indicate that Texans will enter community colleges seeking the skills and competencies needed to survive in today's highly technical work environments.

Nursing and allied health occupations are expected to account for 54,500 of the projected 10.3 million jobs available in the Texas workforce in the year 2000. The educational trend prompted by the need for a quality workforce in Texas mandates that community colleges establish institutional goal priorities among major constituent groups to maintain program effectiveness. This study examined the current and preferred importance of institutional goals among four community college associate degree nursing constituent groups: advisory board members, college administrators, faculty, and final semester students.

¹John E. De Leon, Ph.D. Assistant Professor, Department of Technology, Southwest Texas State University, San Marcos, TX

Business, industry, and education are grappling with the effects brought about by exponential advances in technology. Reports document the frustrations and disillusionment of business and industry with the present educational system (Carnevale, Gainer, & Meltzer, 1988; U.S. Department of Labor, 1988). Progressive employers expect more than the traditional technical and basic skills from their employees: they want them to possess cognitive, social and transferable skills (Secretary's Commission on Achieving Necessary Skills, 1991). Technological advancements have also created occupational opportunities in vocational-technical fields that require comprehensive, technical training compatible with associate degree level preparation (Johnson, Evans, Galloway, & Foster, 1990). Brand (1990) noted that community colleges and technical institutes "have the opportunity to be key players in creating a coherent training system" that can reduce the gap existing in the vocational-technical education system (p. 296). Community colleges and technical institutes frequently establish partnerships with business and industry for the preparation of employees to meet contemporary performance standards (Baker & Roe, 1990). Consequently, community colleges and technical institutes are in a unique position to respond to the needs of progressive employers for a skilled and competent workforce (Brand, 1990).

Review of Literature

After a review of studies regarding corporate managers' perceptions of general education competencies needed by the future workforce, Johnson, Foster, and Stachwell (1989) compiled a list of 15 categories of competencies. Johnson, et al. (1990) grouped the 15 categories into six broad competencies. Table 1 reproduces the framework developed by Johnson et al. (1990).

Table 1

Competencies Needed by the Workforce of the Future

Broad Competencies	Specific Skills
Affective Skills	Positive Attitude Motivation & Self Direction Career & Personal Development
Basic Academic Skills	Written Communication Skills Reading & Comprehensive Skills Computation Skills Oral Communication Skills
Cognitive Skills	Problem-Solving Skills Decision-Making Skills Creative & Critical Thinking Skills
Social Skills	Teamwork & Interpersonal Skills Multicultural Skills
Technical Knowledge & Skills	Technical Skills Scientific Knowledge Computer Skills
Transferable Skills	Ability to Learn Flexibility /Adaptability

Note. From Current practices in preparing the future workforce: An analysis of advanced technology programs in Illinois community colleges (p. 5) by S. D. Johnson, J. A. Evans, J. Galloway and T. Foster, 1990, Springfield, IL: Illinois State Board of Education.

Consistent with these six categories are the findings of studies to determine the general education competencies that graduates of the Associate of Applied Science (AAS) degree programs should possess to become employable and adaptable to the technological changes in

the work environment (Armistead, Armistead, & Perkins, 1989; Armistead & Vogler, 1987; Meyer, 1983). Students (Armistead & Vogler, 1987), employers (Armistead, et. al., 1989; Meyer, 1983), and faculty (Perkins, 1985) consistently found affective skills, basic academic skills and cognitive skills to be the most valued competencies acquired during study for the AAS degree. Particularly, studies in Associate Degree Nursing (ADN) curriculum models and competencies (Germann Community College, 1989; Hardee & Worthington, 1983; Seminole Community College, 1985) and employers' perceptions of ADN graduates (Adams & Stoyanoff, 1982; Wright & Yungho, 1989) are parallel with the aforementioned competencies and skills needed for successful employment.

Institutional Goals Studies

Koltai (1984), in a series of recommendations directed towards “strengthening the quality of the associate degree in order to improve its relevance and value to the student, the employer, and to the four-year institution to which the degree holder may wish to transfer,” recommended that all groups involved in the community college (i.e. students, faculty, administrators, employers, community) should be pursuing the same institutional goals (p. 18). Heath (1981) concluded the following, after conducting a study of the attributes colleges would need to possess to “adapt healthily and effectively to the demands of the future” (p. 93):

Future effectiveness as well as survival may well depend in part upon how perceptive are our questions about our own institution's ethos. As vague as the idea of “ethos” may be to some, it refers to the subjective reality to which faculty and students adapt. Hopefully organizing our understanding

about ethos in terms of adaptive potentials will empower us to create more effective schools in the future. (p. 11 O)

Developed by the Educational Testing Service, the Community College Goals Inventory (CCGI) was drafted for the specific purpose of helping community colleges examine institutional goal priorities among constituent groups (Educational Testing Service, 199 1a). Findt and Sullins (1990) utilized the CCGI to form their conclusions. After examining state legislators, presidents, academic administrators, and trustees at 22 North Carolina community colleges they determined that a general consensus existed among the groups supporting the traditional goals of vocational/technical education preparation, general education, and remedial preparation.

Hardin and Martin (1988) applied the CCGI to determine whether institutional goals had changed among key constituent groups at the State Technical Institute of Knoxville (STIK) after the institution's name was changed to the Pellissippi State Technical Community College (PSTCC). After the name change, administrators, faculty, and staff were surveyed for their perceptions concerning the goals as they currently existed and how they would prefer them to exist under the new institution's name. The researchers ascertained that the goals of vocational/technical preparation, general education and remedial/developmental education should remain the institution's areas of emphasis despite the name change.

Scope

Members of the community college constituency evaluated ADN programs to resolve inconsistencies and disparities among students, faculty, administrators, and employers. Through funds partially allocated by the Kellogg Foundation and the Midwest Alliance in

Nursing (MAIN), a three-year project that involved 595 ADN programs comprising over 40 states sought to find means of strengthening ADN programs. The study helped determine disparities among key groups of constituents and uncover other undetectable concerns (Minckley & Walters, 1983).

A number of studies have been pursued in hopes of refurbishing the strength and success of ADN programs (Germana Community College, 1989; Hardee & Worthington, 1983; Seminole Community College, 1985). After conducting a follow-up study of faculty and students to help improve the quality of the ADN program and its graduates, Scott (1982) especially detected disparities in the students' perceptions of the program. While the data concluded that 93.8 % of the graduates would recommend the program to a friend, some weaknesses did surface, one of which involved graduates who felt that the time allotted between classes was inadequate. In addition, the students noted that the staff did not address their needs as students when they were enrolled in the program. Williams (1988) studied the perceptions of faculty, students, and administrators to determine the effectiveness of an ADN program and found that students, faculty, and administrators were at odds regarding the direction and mission of the institution. The study findings enabled the researcher to design a solution that implemented better communications between faculty, students, and administrators to establish institutional goal priorities.

Statement of Problem

The literature reviewed reveals that a community college's longevity, prosperity, and mission authenticity hinge on key constituencies embracing congruent goals. Researchers endorse the notion that if community colleges are to be receptive to the needs of their

groups. Finally, institutional goal priorities can be determined by performing a systematic analysis of the perceptions of key community college constituencies regarding the importance of institutional goals.

If post-secondary institutions that offer ADN programs are to maintain and improve program effectiveness, the perceptions of major constituent groups should be studied to construct the foundation for decisions leading to program effectiveness and institutional longevity. A study was undertaken to determine the degree of similarities and differences between major constituent groups at one post-secondary institution regarding their perceptions of existing and desired institutional goal priorities.

Statement of Purpose

In Texas, community colleges provide education to approximately 50% of all students enrolled in higher education. Of the projected 10.3 million Texas jobs available in the year 2000, over 1.8 million will require at least one year of post-secondary education. Specifically, nursing/allied health occupations (i.e., dental assistant, medical assistant, nursing) are expected to experience the largest annual growth until the year 2000 (Texas Employment Commission, 199 1). The purpose of this study was to examine the perceptions of students, faculty, administrators, and program advisory board members regarding institutional goal priorities at a Texas post-secondary institution that offered an ADN program.

Methodology

Houston Community College System (HCCS), one of 38 Texas post-secondary institutions offering Associate Degree Nursing programs, was selected as the institution investigated for the study. HCCS is a multi-campus community college system consisting of six regional colleges, one of which is the Southeast College that manages the ADN program for HCCS. During the period 1989-1991, HCCS awarded 358 Associate Degree Nursing degrees; the second highest in the state. In addition, when compared to other public Associate Degree Nursing programs in the state, HCCS' Associate Degree Nursing program has experienced the largest growth in student enrollment during the past two years.

Sample

The study examined the perceptions of four key constituent groups from the Southeast College ADN program regarding institutional goal priorities. Twenty-three ADN faculty, 13 college administrators, 128 ADN students, and 5 ADN advisory board members were involved. Cluster sampling identified the student subjects for the study. The elements (students in their final semester of study) were found in 1 of 16 clusters (classes). Nine classes of students were randomly selected utilizing a random digits table (Borg & Gall, 1983). All 128 students enrolled in the randomly selected classes were surveyed.

Data Collection and Analysis

The surveys were distributed to the subjects selected during the second week of March 1993. Each subject received a packet containing a copy of the CCGI survey instrument, a letter of transmittal from the dean of instructional services, and a self-addressed, stamped

envelope. Four weeks after initial distribution, a letter of reminder was mailed to each subject, excluding the students, to encourage responses. Final collection of instruments was made eight weeks after initial distribution.

Participants were asked to rate 90 goal statements found in the CCGI in terms of how important is the statement perceived to exist currently versus its preferred (should be) importance. The goal area statements were reduced and reflected in 20 goal area categories; each goal comprised four statements. Ten of the 90 statements were miscellaneous and were not tabulated. The respondents rated the statements on a five-point scale, where 1 indicated of no importance. or not applicable, and 5 indicated of extremely high importance. Means were determined for each goal area. A goal mean had a value ranging from a low of 1.00 to a high of 5.00. The higher the mean, the higher the importance of the goal area. The following research question was explored: Do differences exist between the current and preferred importance of goal areas within each constituent group and, if so, are these differences significant?

A data base of the survey responses was created for the purpose of statistical manipulation procedures. The data were entered into the Texas A&M MVS (Wylbur) system at College Station and analyzed using the SAS system. Statistical comparisons were based in terms of the 20 goal area means. A repeated measures t-test was performed by group to determine if differences between the current (is) and preferred (should be) goal rankings were significant; alpha was set at 0.05.

Results

The study obtained a 62% response rate. The advisory group achieved the highest response rate at 100% and the faculty group the lowest at 52%. The student and administrator groups both achieved 60% response rates.

Faculty constituency. As shown in Table 2, the faculty constituency did not perceive a single goal as currently being of high importance. They did, however, indicate that the goals of intellectual orientation, general education, faculty/staff development, and developmental/remedial preparation should be of high importance as institutional goal priorities. Particularly, the goal of college community was perceived as being of low importance (mean of 2.56) and ranked last under the current importance of goals, but attained a ranking of fifth (mean of 3.97) among the preferred importance of institutional goals. Two goals, general education and intellectual orientation, escalated from of medium importance under the is category to of high importance under the should be category. Furthermore, all 11 changes were both positive (an increase in is to should be mean value) and significant.

Student constituency. As reflected in Table 3, students, like their faculty counterparts, indicated that none of the 20 goals provided were currently being viewed as of high importance. The students were in agreement with the current and preferred importance of general education, ranking it the most important goal under both is and should be categories. In addition, the data analysis showed that the student constituency perceived that more emphasis should be placed on the goals of counseling and advising, personal development, and college community. This is manifested in the significantly different positive changes

Table 2

Faculty^a Constituency Current and Preferred Importance of Goal Areas

Current “Is”	Mean	Preferred “Should Be”	Mean
		“Of High Importance”	
		Intellect Orientation	4.39
		General Education	4.12
		Faculty/Staff Dev	4.12
		Dev/Remedial Prep	4.04
“Of Medium Importance”			
Voc/Technical Prep	3.77	College Community	3.97
*General Education	3.56	Personal Dev	3.95
Dev/Remedial Prep	3.50	Lifelong Learning	3.89
Counseling & Advising	3.42	Voc/Technical Prep	3.83
*Lifelong Learning	3.31	Effective Management	3.81
“Intellect Orientation	3.29	Accountability	3.72
Accessibility	3.25	Humanism/Altruism	3.70
Student Services	3.23	Counseling&Advising	3.68
*Personal Dev	3.17	Innovation	3.62
*Accountability	3.13	Intellect Environment	3.56
“Intellect Environment	3.02	Social Criticism	3.39
“Effective Management	3.00	Accessibility	3.39
		Student Services	3.37
		Cult/Aesthetic Awar	3.25
		Community Services	3.20
		Freedom	3.14
“Of Low Importance”			
Community Services	2.98		
*Humanism/Altruism	2.98		
*Faculty/Staff Dev	2.96		
Cult/Aesthetic Aware	2.92		
Freedom	2.90		
“Innovation	2.88		
Social Criticism	2.75		
*College Community	2.56		

Note. Scale: 1 = of no importance, or not applicable; 2 = of low importance; 3 = of medium importance; 4 = of high importance; 5 = of extremely high importance. ^an = 12. * = Difference between “Is” and “Should Be” mean values significant, Alpha (Prob> t) =0.05.

in mean values for each goal. All three goals achieved an of low importance ranking under the is category, but attained an of high importance ranking under the should be category.

As depicted in Table 3, all changes in ranking were both positive and significantly different. Five goals had positive changes from of medium importance status to importance, and 10 goals advanced from of low importance to of medium importance. Despite advancing from an of low importance to an of medium importance, cultural/aesthetic awareness remained the least important goal in both the is and should be categories.

Administrator constituency. As shown in Table 4, vocational/technical preparation was considered of high importance among the administrators, achieving the highest scale rating as the most important current goal (mean of 4.14) and preferred goal (mean of 4.52) of the community college.

Notably, the three goals of college community, humanism/altruism and intellectual environment constituted is means that ranked them of low importance, but achieved an of high importance ranking under the should be category. Cultural/aesthetic awareness received is and should be means that ranked it the least important current and preferred goal. Of the 18 significantly different positive changes in mean rankings, two goals changed from low to medium importance status and 12 changed from medium to high importance status.

Advisory constituency. Table 5 reveals that the advisory constituency perceived general education to be the most important current goal (mean of 3.90) of the institution, but attested that faculty/staff development should be the most important goal (mean of 4.75).

Table 3
Student” Constituency Current and Preferred Importance of Goal Areas”

Current “Is”	Mean	Preferred “Should Be”	Mean
		“Of High Importance”	
		General Education	4.39
		Dev/Remedial Prep	4.18
		College Community	4.13
		Voc/Technical Prep	4.11
		Lifelong Learning	4.07
		Intellect Orientation	4.03
		Personal Dev	4.03
		Counseling & Advising	4.00
“Of Medium Importance”			
General Education	3.69	Humanism/Altruism	3.79
Lifelong Learning	3.36	Accessibility	3.78
Intellect Orientation	3.27	Faculty/Staff Dev	3.77
Voc/Technical Prep	3.24	Accountability	3.77
Dev/Remedial Prep	3.17	Student Services	3.76
Accessibility	3.03	Effective Management	3.75
Effective Management	3.02	Intellect Environment	3.65
		Innovation	3.62
		Community Services	3.58
		Social Criticism	3.56
		Freedom	3.50
“Of Low Importance”			
Freedom	2.88	Cult/Aesthetic Aware	2.98
Accountability	2.86		
Counseling & Advising	2.81		
Personal Development	2.81		
Faculty/Staff Dev	2.76		
Humanism/Altruism	2.70		
Social Criticism	2.67		
Community Services	2.60		
Student Services	2.60		
Innovation	2.59		
College Community	2.58		
Intellect Environment	2.47		
Cult/Aesthetic Aware	2.25		

Note. Scale: 1 = of no importance, or not applicable; 2 = of low importance; 3 = of medium importance; 4 = of high importance; 5 = of extremely high importance. ^an = 78. * = All differences between “Is” and “Should Be” mean values significant, Alpha (Prob>t) =0.05.

Table 4

Administrator Constituency Current and Preferred Importance of Goal Areas

Current	Mean	Preferred	Mean
“Of High Importance”			
Voc/Technical Prep	4.14	Voc/Technical Prep	4.52
		Dev/Remedial Prep	4.47
		General Education	4.38
		College Community	4.36
		Personal Dev	4.25
		Intellect Orientation	4.22
		Lifelong Learning	4.19
		Faculty/Staff Dev	4.19
		Effective Management	4.13
		Community Services	4.11
		Innovation	4.11
		Humanism/Altruism	4.08
		Student Services	4.05
		Accountability	4.05
		Counseling & Advisin	4.00
		Intellect Environment	4.00
“Of Medium Importance”			
*General Education	3.81	Accessibility	3.88
“Counseling & Advising	3.61	Social Criticism	3.86
Accessibility	3.50	Freedom	3.61
*Dev/Remedial Prep	3.47	Cult/Aesthetic Aware	3.58
*Community Services	3.39		
*Student Services	3.36		
*Faculty/Staff Dev	3.36		
*Accountability	3.31		
*Effective Management	3.2		
“Lifelong Learning	3.17		
*Intellect Orientation	3.11		
*Freedom	3.08		
*Personal Dev	3.03		
*Innovation	3.03		
“Of Low Importance”			
“Social Criticism	2.81		
*Humanism/Altruism	2.78		
*Intellect Environment	2.75		
“College Community	2.61		
*Cult/Aesthetic Aware	2.53		

Note. Scale: 1 = of no importance, or not applicable; 2 = of low importance; 3 = of medium importance; 4 = of high importance; 5 = of extremely high importance. ^an⁹.
 * = Difference between “Is” and “Should Be” mean values significant, Alpha = 0.05.

Table 5

Advisory³ Constituency Current and Preferred Importance of Goal Areas

Current	Mean	Preferred	Mean
"Of High Importance"			
Faculty/Staff Dev			4.75
College Community			4.70
Dev/Remedial Prep			4.60
Accountability			4.50
General Education			4.45
Voc/Technical Prep			4.45
Counseling & Advising			4.40
Effective Management			4.25
Lifelong Learning			4.20
Personal Dev			4.20
Community Services			4.15
Innovation			4.10
Humanism/Altruism			4.00
"Of Medium Importance"			
General Education	3.90	Intellect Orientation	3.90
Voc/Tech Prep	3.75	Intellect Environment	3.85
Lifelong Learning	3.35	Student Services	3.80
*Dev/Remed Prep	3.35	Accessibility	3.45
Community Serv	3.20	Freedom	3.25
Student Services	3.15	Social Criticism	3.20
Personal Devlpt	3.10	Cult/Aesthetic Aware	3.15
*Faculty/Staff Dev	3.00		
"Of Low Importance"			
*Innovation	2.95		
Accessibility	2.95		
Intellectual Orient	2.90		
Social Criticism	2.90		
Counseling & Ad	2.90		
*Accountability	2.90		
Effective Mangm	2.85		
*Humanism/Altr	2.70		
*Cult/Aesth Aware	2.65		
"Intellect Envirmt	2.65		
Freedom	2.60		
"College Commnty	2.50		

Note. Scale: 1 = of no importance, or not applicable; 2 = of low importance; 3 = of medium importance; 4 = of high importance; 5 = of extremely high importance. ^an = 5.

* = Difference between "Is" and "Should Be" mean values significant, Alpha (Prob > t) = 0.05.

They felt that none of the goals presented had current priority status comprising of high importance ranking.

College community had the lowest mean (2.50), a scale rating of low importance under the is category of goal importance. Nevertheless, it received an of high importance ranking with a mean value of 4.70. Furthermore, five additional goals (accountability, counseling and advising, effective management, innovation, humanism/altruism) had is mean value increases that escalated their of low importance status to of high importance.

All seven goals receiving is mean values reflecting of low importance ranking, with the exception of student services, had positive increases under the should be category ranking them of high importance. In addition, six goals increased from of low importance rank to medium importance in relation to the current and preferred importance of the goals, respectively. Only eight of the positive changes in mean values were significant.

Summary

Only the administrators perceived vocational/technical preparation to be of high importance. The faculty members perceived that 12 goal areas were of medium importance, the students perceived 7, the administrators 14, and the advisory members 8. The three goal areas of general education, developmental/remedial preparation, and lifelong learning were perceived of medium importance, and humanism/altruism, cultural/aesthetic awareness, social criticism, and college community were perceived to be of low importance by all four groups.

In preferred importance of goals, only the students rated a goal less than of medium importance on the scale. The faculty constituency preferred the importance of four goals to be of high importance. The students rated 8, the administrators 16, and the advisory board members rated 13 similarly. The students felt that general education should be the most important goal area. The administrators and advisory board members indicated that

vocational/technical preparation and faculty/staff development should be the most important goals, respectively. Two groups, faculty and student, affirmed that freedom should be the least preferred among the of medium importance goal areas. General education and developmental/remedial preparation were perceived of high importance as preferred goal areas by all four groups. Three goal areas were considered of medium importance as preferred by all constituencies: accessibility, social criticism, and freedom. In terms of means, vocational/technical preparation, general education, and developmental/remedial preparation were among the top 10 most important current and preferred goal areas by all four groups. Three goal areas were among the 10 least important current and preferred: intellectual environment, social criticism, and cultural/aesthetic awareness.

Conclusions

In general, the results of the study were consistent with previous research in the field of institutional goal studies. All groups felt that the goal areas should be more important than they are currently being perceived in order to exist. Data analysis found some discrepancies to be significantly different. The faculty members had 11 significantly different discrepancies, the students had 20, the administrators had 17, and the advisory members had 8 significantly different discrepancies. Only general education and developmental/remedial preparation were preferred to be of high importance as goals for the college; no one goal was preferred to be most important by all four groups.

Although the groups could not reach agreement on the goal that should be the most important for the college, there were similarities among the groups regarding the current importance of six goal areas. Four goal areas (developmental/remedial preparation, vocational/technical preparation, general education, and lifelong learning) were perceived to be of medium importance by the four constituencies. College community and cultural

aesthetic awareness were considered of low importance. This indicates that the groups perceive the traditional goals of the community college (a student's quality of education, commitment to non-traditional students, accommodation of adequate remedial programs, and the attainment of occupational competence) to be more important than formulating a climate in which there is faculty and staff communication.

Differences concerning current importance of three goals (community services, vocational/technical preparation, and counseling and advising) proved significant among the students and administrators. The students did not perceive their occupational training to be the most important goal. The administrators, on the other hand, perceived that vocational/technical preparation was the most important current goal.

The findings reveal that all four constituent groups perceived that more could be done in all the 20 goal areas. This came as no surprise to the researcher, since people naturally tend to expect better services. What is most revealing and significant to the study is that disparities exist in the current perceptions of goal areas. This occurrence demonstrates that the groups are not perceiving the direction and purpose of the college in the same way. All groups perceived the current importance of college community, a goal area that purports "open and candid communication, open and amicable airing of differences, and mutual trust and respect among faculty, students, and administrators" to be of low importance (Educational Testing Service, 1991b). All groups, however, preferred that college community should be ranked among the most important goals of the institution. Consequently, the great number of disparities could perhaps be attributed to the fact that the groups do not hold communication and openness to be among the most important goal of the college.

Another group disparity that merits commentary concerns the goal area of community services, which is defined as being “concerned with the college’s relationship with the community: encouraging community use of college resources (meeting rooms, computer facilities, faculty skills), conducting community forums on topical issues, promoting cooperation among diverse community organizations to improve availability of services, and working with local government agencies, industry, unions, and other groups on community problems” (Educational Testing Service, 1991b). The faculty group rated community services of low importance as both a current and preferred goal. On the other hand, the students rated it of low importance as a current goal, but preferred that it should be of medium importance. The administrators and advisory members felt that it was of medium importance currently, but would prefer to see it be of high importance. The disparity among the faculty members and the rest of the groups regarding the scale value of this goal reiterates the perception held constant by the ADN faculty members: the primary mission of the ADN program should be preparing students for workplace responsibilities. In addition, low response rate by faculty to the survey supports sentiment that ADN faculty are pursuing only the traditional community college goals of vocational/technical preparation and general education. The faculty should broaden their perspective on the mission of the college to include not only the interests of the individual learners, but also the interests of the various constituencies they serve.

Recommendations

The following recommendations are made in reference to the conclusions reached from the study involving ADN faculty, ADN students, college administrators, and ADN advisory board members of the Southeast College:

1. Discussion on the results of the study among the constituent groups involved may be useful in resolving areas of disagreement regarding the importance of institutional goals. This can be realized by fortifying established institutional linkages and by augmenting the current mediums of communication among the groups. The lifeline of an institution is its ability to communicate both internally and externally. Specifically, the administrators could demonstrate to the faculty members (who perceived that faculty/staff development was “of low importance” currently) that their stability and interests as faculty members are of concern. This could perhaps be accomplished by providing educational opportunities that are aimed at strengthening awareness and understanding of their role as one of many constituencies that comprise the community college. In addition, with the influx of computer technology and sophisticated communications in almost every facet of community college activity, there is no excuse why staff, faculty, and administrators could not exchange ideas, concerns and strategies. A strategy to reduce the communication gap among the faculty and administrators would be for the college to provide incentives for faculty/administrator collaborative initiatives with public and private organizations.

2. The most significant of the internal variables of an institution is, perhaps, leadership. In striving to achieve program excellence, college administrators and their board of trustees should subject the mission of the college to the consistent changes driving the internal climate of the college. The leadership of the Southeast College should, therefore, consider training and retraining initiatives needed to insure harmony, allegiance, and cohesion to shared goals critical to the institution’s effectiveness.

References

Adams, F. G., & Stoyanoff, K. (1982). A study of Illinois employer reactions to training credentials. Springfield, IL: Illinois State Department of Commerce and Community Affairs, Lake County College.

- Armistead, J. S., Armistead, L. P., & Perkins, D. R. (1989). The amount and importance of general education in the two-year occupational curriculum according to corporate employers. Community/Junior College Quarterly, 13, 91-99.
- Armistead, L. P., & Vogler, D. E. (1987). The importance of general education courses and competencies as viewed by community college occupational students. Journal of Studies in Technical Careers, 9 (3), 191-200.
- Baker, G., & Roe, M. (1990). The development of community college leaders: A challenge for our future. Community College Review, 16 (4), 5-16.
- Borg, W. R., & Gall, M. D. (1983). Educational research: An introduction. New York, NY: Longman.
- Brand, B. (Fall, 1990). The U. S. department of education's perspective of postsecondary technical training needs. Journal of Studies in Technical Careers, 7 (4), 295-300.
- Carnevale, A. P., Gainer, L. J., & Meltzer, A. S. (1988). Workforce basics: The skills employers want. Washington, DC: U.S. Department of Labor & The American Society for Training and Development.
- Educational Testing Service. (199 1a). Community college goals inventory: Processing and reporting services. (Form No. 57208-02312). Princeton, NJ: ETS Higher Education Assessment.
- Educational Testing Service. (1991 b). Community college goals inventory: Processing and reporting services. (Form No. 57208 -Y44P. 1-24 1841). Princeton, NJ: ETS Higher Education Assessment.
- Findt, W. C., & Sullins, W. R. (1990). North Carolina community college goals for the future. Community College Review, 17 (4), 44-45.
- Germanna Community College. (1989). Germanna community college assessment report. Locust Grove, VA: Germanna Community College.
- Hardee, V. M., & Worthington, R. G. (1983). Curriculum models and competencies. Associate degree nursing and nursing education options: Associate degree with practical nursing. Raleigh, NC: North Carolina Department of Community Colleges.
- Hardin, J. W., & Martin, F. H. (1988). A study of staff perceptions of institutional goals before and after a major institutional mission. Knoxville, TN: Pellissippi State Technical Community College.
- Heath, D. H. (1981). A college's ethos: A neglected key to effectiveness and survival. Liberal Education, 37,(2), 89-111.

- Johnson, S. D., Evans, J. A., Galloway, J., and Foster, T. (1990). Current practices in preparing the future workforce: An analysis of advanced technology programs in Illinois community colleges. Springfield, IL: Illinois State Board of Education, Department of Adult, Vocational and Technical Education.
- Johnson, S. D., Foster, W. T., & Satchwell, R. (1989). Sophisticated technology, the workforce, and vocational education. Springfield, IL: Department of Adult, Vocational and Technical Education.
- Koltai, L. (1984). Redefining the associate degree (Report No. ISBN-0-871 17-131-7). Washington, DC: American Association of Community and Junior Colleges.
- Meyer, R. B. (1983). Desired general education competencies: A corporate perspective. Dissertation Abstracts International, 44, 07A, p. 2023. (On Disc Jul1980-Dec 1984).
- Minckley, B. B., Walters, M. D. (1983). Defining competencies for associate degree nursing education and practice. Proceedings of the midwest regional conference on "The associate degree nursing--facilitating competency development" project (Report No. ISBN-0-942 146-06-9). Indianapolis, IN: Midwest Alliance in Nursing, Inc.
- Perkins, D. R. (1985). General education competencies as outcomes of two-year occupational programs: A comparison of corporate and academic views. Dissertation Abstracts International, 47, 02A, p. 394. (On Disc Jan 1985-Dec 1988).
- Scott, D. C. (1982). Nursing education follow-up study--1982 R.N. 's. Bakersfield, CA: Bakersfield College, Office of Institutional Research.
- Secretary's Commission on Achieving Necessary Skills. (1991). What work requires of school. Washington, DC: U.S. Department of Labor.
- Seminole Community College. (1985). Associate degree nursing program guide. Final report from February 19, 1985 to August 31, 1985. Tallahassee, FL: Florida State Department of Education, Division of Vocational Education.
- Texas Employment Commission. (199 1). Texas work force 2000. Austin, TX: The Economic Research and Analysis Department.
- Williams, J. (1988). Student development services program evaluation. Martinsville, VA: Patrick Henry Community College.
- Wright, C. E., & Yungho, K. (1989). A study of general education requirements in vocational education programs. Menlo Park, CA: California Community Colleges, Office of the Chancellor.

Multiskilling: The Quiet Revolution
in Healthcare Education and Training

Jenny Auger Maw¹

Catherine M. Sleezer

Abstract: This paper examines the topic of multiskilling in three areas: (a) healthcare trends that drive the need for multiskilling, (b) perspectives from the multiskilling literature, and (c) a case study describing the use of multiskilling and patient-focused care in one organization. Trends facing healthcare providers include cost containment, mergers and alliances, and consumerism. Integrated, these trends cause a fundamental reshaping of the field. One strategy that healthcare providers are using to adapt to the changing business environment is multiskilling. This strategy can lower costs, facilitate collaboration among those providing care and increase patient satisfaction.

¹Jenny Auger Maw is Corporate Vice President, Organizational Development, HillCrest Health Care System, Tulsa, OK; Catherine M. Sleezer, Ph. D., is Assistant Professor, Department of Occupational and Adult Education, Oklahoma State University, Stillwater, OK

A Specialist is someone who knows
more and more about
less and less

A Generalist
knows less and less
about more and more

A growing number of healthcare executives say that the beleaguered industry can no longer afford a workforce composed of too many types of specialized technicians, many of whom are in short supply and protected by state legislative acts that regulate allied health professions. Critics of the current system are quietly shaping a radical solution to the problem: **multiskilling**. The idea, which healthcare executives have modified from a strategy created for high-tech manufacturing, is to train technicians to perform multiple tasks so they can be deployed more efficiently (Perry, 1991). This paper examines the topic of **multiskilling** in three areas: (a) healthcare trends that drive the need for **multiskilling**, (b) perspectives from the **multiskilling** literature, and (c) a case study describing the use of **multiskilling** in one organization.

Healthcare Trends That Drive the Need for **Multiskilling**

The trends that provide the impetus for **multiskilling** include cost containment, mergers and alliances, and consumerism. The first trend, cost containment, is currently receiving press in relation to healthcare reform. Previously, advancements in medical technology and patient care drove change. Today, the financing of healthcare to control costs drives change (Healthcare Advisory Board, 1994). For example, the days of adequate reimbursement have been replaced with meager reimbursement and shortfalls. Further, the cost shifting that once provided a financial cushion has been limited by cavitation, and fee for service payment has

given rise to managed care, discounts, and cavitation. Such cost containment strategies have changed the business environment for healthcare providers from one of stability, predictability, and financial strength to one of turbulence, vulnerability, and concern about financial viability.

As a response to this trend, healthcare providers are being pressured to do more with less and to achieve better outcomes in the process (Berwick, Godfrey & Roessner, 1991). To this end, quality assurance has been replaced by quality improvement, continuous quality improvement, total quality management and statistical measurement of patient clinical outcomes (Marszalek-Gaucher & Coffey, 1991). Another result of this trend is that healthcare providers, like other types of organizations, are controlling costs by moving from full-time employment to outsourcing, contracting, and buying services on an as needed basis (Health Advisory Board, 1989).

A second trend affecting healthcare is mergers and alliances. Hospitals are increasingly recognizing the need to align and become part of a healthcare system (Health Care Advisory Board, 1994). Similarly, physicians who used to practice independently, today practice collaboratively. Physicians are increasingly becoming hospital employees, joint venturing with hospitals in shared ownership/risk opportunities or forming networks to contract for patients on a capitated basis. A result of this trend is that the field is moving from one comprised mostly of individual, fragmented providers to one increasingly comprised of fully-integrated healthcare delivery systems.

The third trend is the changing view of consumers. In the past, healthcare providers viewed individual patients both as primary customers and as uninformed individuals who

passively needed medical treatment--the more medical treatment, the better. Today providers increasingly recognize healthcare purchasers and their employees as major customers with each individual patient viewed as an integral part of his or her healthcare team. Patients are participating more in the decision-making and the care process and are being required to pay more out-of-pocket expenses.

A result of this trend is that healthcare providers are seeking ways to simultaneously meet the needs of individual patients and the needs of healthcare purchasers and their employees. So they are pursuing strategies that allow healthcare to be provided to more consumers at lower expense. These strategies are designed to increase the patients' ownership of their problems and satisfaction with care and, at the same time, decrease costs, administrative inefficiencies, and unnecessary services.

Each trend described above exerts a powerful force on healthcare providers, and when integrated the trends cause a fundamental reshaping of the field. The Health Care Advisory Board (1992, 1994) recently described the reshaping of one type of provider, hospitals. They pointed out that the hospital of old is being totally and radically restructured to provide more effective, efficient patient-centered care. The dynamic business environment and the restructuring of healthcare entities by their very nature alter the roles of key stakeholders including nurses, physicians, and allied health professionals.

One strategy that providers are using to adapt to the changing business environment is multiskilling. The expectations are that this strategy can lower costs, facilitate collaboration among those providing care, and increase patient satisfaction.

Perspectives from the Multiskilling Literature

Multiskilling is a form of working that seeks to promote the exchange, sharing and common ownership of tasks. Zander (1992) described multiskilling as an approach that is designed to eliminate multiple caregivers, improve continuity and resource utilization, and broaden jobs. The outputs of multiskilling include the re-arrangement of existing day-to-day work and the creation of teams to undertake short-term and long-term improvement projects (Bureau of Health Professions, 1994).

A clearer definition of this term is provided by the National Multiskilled Health Practitioner Clearinghouse (Bamberg, Blayney, Vaughn & Wilson, 1989) who delimit the multiskilled health care practitioner as follows:

A person who is cross-trained to provide more than one function, often in more than one discipline. These combined functions can be found in a broad spectrum of health related jobs ranking in complexity from non-professional to professional level including both clinical and management functions. The additional function added to the original healthcare worker's job may be of higher, lower, or parallel level. (p. 14)

A concept related to multiskilling is patient-focused care. Patient-focused care appears to have its origins in projects initiated by the healthcare consulting industry in the mid- 1980s. The most prominent information published on consulting firm projects centers on the work of Booz-Allen Health Care Inc. The Booz-Allen concept of patient-focused care evolved from a three-year review of twelve institutions (Lathrop, 1991, 1992). The study's findings revealed that the amount of compartmentalization in modern hospitals is the primary contributor to poor service and high cost.

Patient-focused care was a specific model for institutional change started by staff and consultants at Lakeland Regional Medical Center in Lakeland, Florida with consulting help from Booz-Allen. Patient focused care involved grouping patients based on the resources that were needed, and redeploying services and staff to patient care units where through extensive cross-training and team assignments, 80% of all care needed by the patient could be provided on the unit (Makely, 1994).

According to Lathrop (1991), the objectives of patient focused care are:

1. reduction in time spent in scheduling, transportation, documentation, and structural idle time and devotion of much of the time saved to direct patient care;
2. elimination of some staff time, reducing cost per patient day;
3. improvement in patient perceptions of quality and level of caring; and
4. improvement in staff members' satisfaction with their roles, which would improve retention and reduce turnover.

Commonalties between the concepts of multiskilling and patient-focused care are the use of generalists and teams and the expected approach that employees have toward working. Employees have the freedom to progress tasks as far as they can, either as individuals or as members of a team. They are expected to seek help and assistance from colleagues and to be able to judge for themselves how far they can competently progress work. **Multiskilling** does not mean that employees become jacks-of-all-trades and masters of none. What it does mean is that employees are expected to take an adult, open-minded approach to their work both in their primary skill area and in other areas. The development of multiskilling is usually based on two principles (Bureau of Health Professions, 1994): (a) competency within the

workplace where employees assess and rectify problems as they occur day to day, (b) the full utilization of capabilities.

Multiskilling offers a new framework for considering who does what and how it gets done, what specific skills are required to perform which tasks, and when and how employees can acquire skills. The benefits of multiskilling for the provider can be expected in areas such as increased productivity, reduced management hierarchies, better use of resources, and improved customer service. As Cross (1991) pointed out, such benefits are very appealing to a healthcare industry that is facing significant economic challenges.

Multiskilling also benefits health care professionals. Healthcare roles and responsibilities are evolving and are impacting traditional health occupations significantly. Shortages of hospital workers are being replaced by surpluses, and jobs in hospitals are decreasing whereas out-patient jobs are on the rise (Makely, 1994). With the healthcare world needing fewer specialists and more generalists, traditional, profession-centered roles are being redesigned into patient-centered roles. In this environment, multiskilling provides a strategy for individual employees who want to learn additional skills and remain employable.

The ramifications of multiskilling for healthcare professions, their roles within the healthcare systems of the future, and the educational reform required to produce the healthcare worker of tomorrow are immense. Previously well-defined roles are now blurred. For example, the nurse's role in many organizations has changed to one of working on patient care units, alongside a broad range of ancillary staff and supervising assistive, non-nursing personnel. No longer does the head nurse alone run a hospital nursing unit, delegating tasks to other nursing personnel. Instead, non-nurses frequently manage these

units. And, the days of ample staffing have given way to limited support staff and a do-it-yourself attitude.

In this environment, professional scope of practice, which once regulated employers, is now stretched to its legal limits and sometimes beyond. Increasingly, petitions to implement waivers to current law are being made. Policy makers are resisting laws that restrict professional practice; they are tending towards reducing regulations, and are revisiting existing policy to identify and remove unnecessary barriers (Makely, 1994). The power of the professional association has been replaced by the power of the major purchasers of healthcare. Whereas in the past professional associations were viewed as watch dogs for quality, today they are viewed as turf-protectors (Pew Health Professions Commission, 1994).

In summary, multiskilling serves as a useful strategy for healthcare providers who are adapting to the trends that are reshaping the field. However, implementing this strategy has implications for healthcare providers, employees, and health care educators. The next section of the paper details the implementation of multiskilling and patient-focused care by one organization and describes the specific issues faced by each stakeholder group.

Multiskilling in One Organization: A Case Study

In 1990, Hillcrest Medical Center, a 607 bed facility in Tulsa, Oklahoma initiated a project to implement patient-focused care that had multiskilling as its core. Hillcrest management recognized the implications of the trends impacting the healthcare field and proactively decided to initiate this project to improve stakeholder satisfaction and lower costs

Prior to its implementation, Hillcrest's President and Chief Executive Officer (CEO) wrote a Message from the President that provided the following contextual frame for the project:

Over the years, hospitals have been places where doctors, nurses and other skilled professionals come together to care for sick and injured patients. In more recent times, however, the proliferation of modern technology, together with professional specialization have combined to create a hospital environment where more and more care givers know more and more about less and less. . . . We should not be surprised to learn that the specialization, compartmentalization and fragmentation of everyday hospital tasks actually get in the way of smooth running, cost effective operations. . . (Skill, 1991, p. 1)

Because the project represented significant change in organizational procedure and would require carefully planned implementation, Hillcrest decision makers engaged external consultants to guide the initial data gathering and project implementation. Each step in the planning and implementation process is described in the following paragraphs.

Step one involved forming a team whose task was reviewing the way we do things today and offering recommendations. Team members, who served voluntarily, were selected based on their diverse clinical expertise. The team was comprised of nine members--Hillcrest employees at all levels of the organization. In addition, the consulting group worked closely with this team.

Step two involved assessing current performance. To accomplish the task of reviewing the way we do things today, the team divided into three subgroups, each focusing on one of the following areas: examination of the professional and clinical staffs, analysis of the administrative and business functions, and study of the support functions.

Accomplishing this step was not easy. It required the cooperation of team members from different hospital areas, different cultures, and different problem solving skills and life experiences. As members of the subgroups scrutinized their own and other areas in the hospital, they often engaged in self-examination and rigorous debate among themselves. As Still (1991) reported in the hospital's magazine, accomplishing the task also involved

shedding of professional skins that are acquired with great cost over time. It also asked of all of us that we leave departmental boundaries and turfs that we had enormous stake in building. . We stopped seeing the world with *pharmacy glasses, accounting spectacles, or nursing bifocals*. We started seeing ourselves as our patients see us—a kaleidoscope of faces often asking the same question they answered an hour ago, systems that cannot produce snacks without notice, and a bewildering barrage of titles who appear too busy to ask a question. (p. 3)

In analyzing the data, the team discovered that only small percentages of staff time were given to direct patient care activities, such as giving medications, changing dressings, **taking** temperatures or assisting with surgery or procedures. In contrast, the majority of staff time was dedicated to scheduling, transportation of patients or goods and documentation of care. In addition, approximately one-fifth of staff time was **structural** idle time--time that staff members with narrowly assigned tasks spent waiting for the opportunity or need to carry out those tasks.

Step three involved developing recommendations. The consultants favored implementing a patient-focused model that they had used in other locations. Members of the project team felt that this model was inappropriate in its entirety for the organization's culture, system,

and politics. Instead, the project team favored developing prototypes. Developing prototypes would limit the amount of change that had to be absorbed in one time. It would also allow the opportunity to have support systems in place to modify and refine the designs as Hillcrest stakeholders realized how the project worked.

Using an external facilitator, the team members met, processed the situation, and developed recommendations for management. The team recommended implementing two pilot prototypes, one on a general medical surgical unit and the second on a cardiac unit. They further recommended that the majority of patient care on the prototypes be provided on the unit. Strategies for accomplishing this goal included grouping patients based on resources needed, redeploying services, and providing staff with multiskilling. With multiskilling, the expectation was that a patient's care could be provided consistently by a small number of workers who would become familiar to the patient. The team also recommended using solely internal resources to implement the project. The CEO and the members of the executive staff accepted the recommendation.

Step four involved implementing the pilot projects. Employees volunteered to participate in the multiskilling and to work in decentralized, patient-units. The expectation was that unit based staff would work together to accomplish the following tasks for the unit: admit patients, code medical records, change linen, distribute meal trays, perform phlebotomies and provide basic care, routine lab tests and routine respiratory care. The team conducted a needs assessment to determine the specific skill sets of the caregivers and the clinical demands of their patient populations. The team used Hillcrest training and development staff expertise in designing and delivering customized training that matched the needs.

Step five involved evaluating the project results. The success of the project was assessed using measures of patient satisfaction, physician satisfaction, employee job satisfaction, and sound financial performance. Surveys were used to gather the satisfaction data. The results of the surveys indicated that each stakeholder group's satisfaction was higher with patient-focused care and multiskilling. Multiskilled staff capably demonstrated their new abilities, and both patients and physicians appreciated the personalized nature of patient care. Patient and physician surveys showed perceptions regarding quality of care to be higher. Staff reported higher levels of job satisfaction attributed to an increased sense of competence, increased skill sets and closer interaction with the patients.

In evaluating financial performance, it was discovered that the two pilot projects did not generate the cost savings expected if implementation had been considered on a broader scale. The difficulty in measuring the financial benefits was that after the project was implemented the hospital operated with two systems: the prototype units operated using a patient-focused system and multiskilling and the other units operated using a functional system. The use of two systems meant that even when employees on the prototype units provided services, the hospital still needed to maintain central services to meet the needs of units operating under the functional system.

Analysis over time revealed that implementing multiskilling had low costs and high benefits. Implementing patient-focused care, on the other hand, required extensive capital start-up costs. Today, the prototype units are still in operation at Hillcrest HealthCare System, multiskilling training is still being used, and under the leadership of the president

and CEO the organization continues to explore ways to maximize human performance and leaning in healthcare.

Hillcrest Healthcare System has profited from the many lessons learned during the implementation of this project. One lesson was that multiskilling and patient-focused care did result in better patient care. Another lesson was the importance of needs assessment. In implementing human resource performance improvement, Sleezer (1991) advocated analyzing organizational needs, work-behavior needs and individual capabilities. In implementing the project at Hillcrest, each of these levels of analysis was critical to the project's success. Yet, another lesson learned was the importance of adapting this process of organizational change to fit the organization's culture, system, and politics. Hillcrest leaders continue to view multiskilling as a key strategy for addressing healthcare challenges. An important contribution to this view was the involvement of Hillcrest staff in designing and implementing the project.

Conclusions

Multiskilling can provide benefits to healthcare providers, healthcare professionals and patients. But, implementing this strategy means breaking new ground for both employers and educators. It requires rethinking boundaries, gaining broader perspectives, and valuing generalist skills. Multiskilled education and training is similar to other programs in that it poses its own challenges and controversies. One challenge is that there are no universal essentials or guidelines available to guide practitioners and educators.

Another challenge is identifying who will train multiskilled workers, To be effective, multiskilling education or training must be relevant to the employees' jobs and organizational

business goals. Colleges, universities and schools of allied health educated health professionals very capably in the 1980s. In the 1990s, health providers are increasingly willing to education and train staff when schools are unable or unwilling to do so--but such training comes with a high price tag.

As recently as ten years ago, health professional associations and schools that responded promptly to health sector changes could be seen as being in control, if not in command of their environments. Today the strategy of merely reacting to change in one's environment is a sure sign of professional rigor mortis. As Selker and Broski (1991) point out, the future increasingly belongs to those who are anticipating, shaping and influencing change even as they are immersed in it. Multiskilling provides a way to harness the future.

References

- Bamberg, R., Blayney, K. D., Vaughn, D. G. & Wilson, B.R. (1989). Multiskilled health practitioner education: A national perspective. Birmingham, AL: University of Alabama at Birmingham, School of Health Related Professions, National Multiskilled Health Practitioner Clearinghouse.
- Berwick, D. M., Godfrey, A. B., & Roessner, J. (1991). Curing health care: New strategies for quality improvement. San Francisco, CA: Jossey-Bass.
- Bureau of Health Professions. (1994). Multiskilling and the allied health workforce. Washington, DC: Department of Health and Human Services.
- Cross, M. (1991). Monitoring multiskilling: The way to guarantee long term change. Personnel Management, 23 (3), 4449.
- Health Care Advisory Board. (1989). Million dollar cost savings ideas: Eighteen tactics for reducing hospital labor costs. Washington, DC: Author.
- Health Care Advisory Board. (1992). Toward a twenty-first century hospital: Redesigning patient care. Washington, DC: Author.
- Health Care Advisory Board. (1994). Network advantage: Scale economics and cost savings. Washington, DC: Author.

- Lathrop, J. P. (1991, July -Aug). The patient-focused hospital. Health Forum, v (i) 17-21.
- Makely, S. (1994, December). Overview: Multiskilling and the allied health workforce. Paper presented at the meeting of the Multiskilling and the Allied Health Workforce National Conference, Washington, D. C.
- Marszalek-Gaucher, E. & Coffey, R. J. (1991). Transforming healthcare organizations: How to achieve and sustain organizational excellence. San Francisco, CA: Jossey-Bass.
- Perry, L. (1991). Staff cross-training caught in cross fire. Modern Healthcare, 26-29.
- Pew Health Professions Commission. (1994). Healthy America: Practitioners for 2005 An agenda for action for US health professional schools and health professions education for the future: Schools in service to the nation. San Francisco, CA: Author.
- Selker, L. G., & Broski, D. C. (1991). Forces and trends shaping allied health care practice and education. Journal of Allied Health, 20 (1), 5-14.
- Sleezer, C. M. (1991). Developing and validating a performance analysis for training model. Human Resource Development Quarterly, 2 (4), 355-372.
- Still, M. (1991). Perspective from the Front Line. Crest, 1-3.
- Zander, A. (1992, September). The muddied waters of patient-focused care. Birmingham, AL: National Multiskilled Health Practitioner Clearinghouse Newsletter.

Developmental Experiences and Critical Competencies
of School Restructuring Leaders

Terrance P. O'Brien¹

Rebecca R. Reed

Abstract: This report describes a study commissioned by the University Council on Teacher Education, College of Education and Psychology, North Carolina State University. Support for the study was provided by the North Carolina Department of Public Instruction. The purpose of the research was to investigate changes that had occurred in three school systems in response to recent state legislation mandating site-based management. Specifically, the researchers sought to identify significant developmental experiences encountered by local restructuring leaders and the critical lessons they learned from those experiences. Using a qualitative approach, investigators interviewed 38 restructuring leaders in three school systems located in central North Carolina. Resultant findings have implications for teacher and administrator preparation programs in institutions of higher education.

¹Terrance P. O'Brien, Ph. D., is Associate Professor, Department of Curriculum and Instruction, North Carolina State University, Raleigh, NC; Rebecca R. Reed, Ed. D., is owner of Ahlgren Associates, Raleigh, NC.

Background of the Study

The University Council on Teacher Education, an advisory body to the College of Education and Psychology at North Carolina State University, commissioned a study of site-based management (SBM) in the public schools for the purpose of identifying significant implications for the preparation and continuing professional development of teachers and administrators. The general intent was to examine the changes in the organization and operation of schools in response to the adoption of Senate Bill 2 (SB2), the School Improvement and Accountability Act, in 1989 and the Performance-Based Accountability Program (PBAP) in 1992 by the North Carolina Legislature. The overarching goal was to assess the impact of those changes on teacher and administrator preparation programs within the College of Education and Psychology. Council members were asked to recommend individuals to serve on a Study Group which would develop specific research questions to be addressed and provide guidance to the project. Subsequently, interest in the study was expressed by the North Carolina Department of Public Instruction (NCDPI) which provided funding to support the research.

Purpose of the Study

The purpose of the proposed study was to investigate the changes that had taken place in area schools and school systems in response to state legislation concerning site-based management. Research questions developed by the Study Group, listed below, were used to provide specific direction to the investigation. Implicit in each of the questions was the concern for identifying the implications for teacher and administrator preparation programs in

institutions of higher education. The target group of individuals to whom the questions would be directed were teachers and administrators in Granville, Johnston, and Wake Counties who had substantial experience with efforts to implement site-based management in their schools or school systems, both positive as well as negative, and who were perceived by their peers as leaders in restructuring efforts. The theoretical framework which supported the design of the study was the philosophy and research associated with experiential learning and the concept that educational leaders can be developed by providing meaningful learning experiences at strategic points in their preparation.

1. What were the most significant experiences with site-based management encountered by leaders in school restructuring during their development as leaders?

2. What were the most critical lessons learned by restructuring leaders from each of the significant experiences they encountered with site-based management?

Methodology

Due to the tremendous variation associated with the problem being investigated and the inherent nature of the research questions, the study utilized a qualitative approach and methodologies commonly associated with that type of research. Essentially, the study involved the use of open-ended interviews with carefully selected individuals in area schools and school systems to gather data relevant to the stated research questions. The investigation was directed by the Study Group appointed by the Council, and Study Group members were integrally involved in all major aspects of the research.

Participants

Participants interviewed during the study consisted of 38 educational leaders selected from school systems involved substantively in site-based management and represented on the University Council: Granville, Johnston, and Wake County Public School Systems. The group was well-balanced with 20 teachers and 18 administrators, although no attempt was made to stratify on this variable as one might do in a quantitative study, and their experience in working with site-based management ranged from one to nine years. All specific individuals invited to participate in the interviews were carefully identified and approved by the Study Group. In the selection process, the Study Group focused on identifying individuals who were or had been true “leading influential” in substantive site-based management efforts. In context of the purpose of the study, the research questions posed, and the intended application of the findings, it was determined that only genuine restructuring leaders would be included in the study. Interview candidates identified by the Study Group were then approached personally by members of the Study Group and invited to participate in the interviews.

As is common in qualitative research, the size of the sample was not determined a priori. Rather, the following criteria were used to determine when the data collection process would be terminated:

1. Exhaustion of Sources: Running out of people to interview.

2. Saturation of Categories: When conducting additional interviews produced only minor increments of new information relative to the time and energy expended to gather the information.

3. Emergence of Regularities: When there was a sense that the emerging themes were more similar than dissimilar.

4. Overextension: When new information appeared to be highly divergent from the emerging categories.

In this study, the second and third criteria actually determined the end of the data collection phase. The resultant data achieved a remarkable level of stability, and it was clear that additional interviews from participants in the three counties involved would not produce substantial contributions to the data base.

Procedures

The Study Group appointed by the University Council was responsible for the overall direction and management of the study, specific identification and approval of interview participants, and general monitoring of the progress of the research. Dr. Beckey Reed, of Ahlgren Associates, was employed as a consultant and was responsible for the actual field research, including communications with participants once they were identified by the Study Group, data collection (interviewing participants), and data interpretation.

An interview protocol was developed by the principal investigators and approved by the Study Group before data collection commenced. The protocol incorporated interview questions directly pertinent to the research questions, as well as introductory and summary

items. In addition, an audit trail was maintained by Dr. Reed to ensure the trustworthiness of the interview process.

All interviews were conducted via telephone and were recorded with the knowledge and consent of the participants. During each interview, Dr. Reed took extensive notes by hand and interpreted them as soon after the interview as possible. A subgroup of the Study Group was identified to work with Dr. Reed during the data interpretation phase of the project. This subgroup consisted of several teachers and administrators who had not been involved in conducting any of the interviews. Debriefings were held periodically with members of the subgroup to provide opportunities for the investigator to validate her evolving perceptions, ask and answer questions, and consider subsequent steps in the process. This standard qualitative practice served to provide additional insights, as well as a check against potential biases of the individual responsible for data collection.

Data Analysis

The guidelines identified below were utilized during the analysis and interpretation of the data collected in this qualitative study of site-based management.

1. Dr. Reed assumed primary responsibility for intuitive, evolving analysis of the emerging data base. In addition, she teamed with a subgroup of the Study Group for the purpose of validating her perceptions and interpretations in the data analysis process. This procedure served to reduce the effect of interviewer bias and provided additional and highly meaningful insights.

2. The language of the persons interviewed was preserved to the maximum extent possible.

3. A computer was utilized to facilitate the text management aspect of the data analysis process.

4. Dr. Reed and the subgroup of the Study Group, through intuitive and inductive reasoning, sought to determine prevalent themes in the data reported and identified and coded the types of site-based management strategies, significant experiences, lessons learned, professional development activities, and recommendations for future teachers and administrators reported by the participants.

Results and Discussion

In this section, the results of the intuitive analysis of the open-ended interviews with the restructuring leaders are reported and discussed. The original language of these leaders is captured where appropriate and is included in quotations. Actual interview questions addressed by the participants are described immediately prior to the summary and discussion of their responses.

Developmental Experiences

Based on their involvement with site-based management, the restructuring leaders were asked to identify experiences which significantly impacted the implementation of SBM in their schools or school systems and which significantly influenced their development as leaders in school restructuring. The personal developmental experiences that stood out in the minds of these restructuring leaders were classified into four categories: **SBM**

Implementation Strategies, SBM Innovations and Changes, SBM Leadership Roles, and SBM Professional Development Activities. They are presented in order of the relative magnitude of their contributions to the development of the restructuring leaders interviewed in this study.

SBM Implementation Strategies

More developmental experiences were reported by restructuring leaders in this category than in the other categories of experiences, making it the most information rich. Respondents shared both positive and negative experiences which were all part of the process of implementing site-based management in their schools and school systems.

Leadership styles. “SBM starts at the top with a superintendent who believes in and pushes the concept” said one leader. Another noted the “school board has to buy-in with actions as well as words.” Still others noted that the “leadership of the principal is key.” “Everyone must buy in” and “empowering versus imposing,” were elements respondents considered essential to successful collaboration, and represented a theme respondents noted in regard to leadership styles they had encountered during their experiences implementing site-based management.

Where site-based management or participatory decision making is kept alive and always up-front in the minds of staff, it becomes a way of life for a school. Where that happens, it becomes an easier thing to do and the growth is steady. Now, some schools do that and some schools don't. I guess the most critical thing is that the

leadership in the school has to be committed to the process and make sure that it becomes a way of life at the school, not a compliance function.

Communication process. Respondents repeatedly indicated that it required intensive communication to implement a specific SBM plan. A respondent described many hours of hard work one team had spent trying to change the school lunch schedule, only to discover just before implementation that the plan would not work. Another participant noted that a “lack of representation resulted in poor communication and no voice in the process.” These leaders shared experiences which ranged from “ugly meetings where communication broke down,” to site-based management becoming an integral part of the daily communication process through written bulletins and informal or formal team meetings.

Basically, all of our decisions are made through site-based management; we have a lead teacher meeting every week. The lead teacher group meets with the administration on a weekly basis concerning mainly curricular and budget issues, not just operational issues. It is just a really good system for getting information out, sharing concerns, and bringing concerns back to the administration so there is input and discussion on a lot of items without having to schedule that hour long faculty meeting on Wednesday afternoon where you only get fifty percent of the folks there. Teachers being members of a team makes them more apt to discuss things with their lead teacher, so we get more of the concerns as well as more of the suggestions through that process.

Collaboration within the school and community. One restructuring leader indicated that SBM “reinforced belief in the positive traits of peers -- they took initiative when

invited.” Participants cited collaborative experiences which resulted in working with teachers in other disciplines and at other grade levels on specific projects related to site-based management. As a result of these efforts, they gained greater respect for their peers and continued to collaborate on other activities. Collaborating with parents and community groups was viewed by the respondents as an essential part of implementing site-based management.

Working in a school and being able to share, you become one family. And if you are one family, you share and you want everybody to feel good about him or herself You work toward that. When you build up this morale, your school booms. It takes all of us to make that happen. And its not just the teachers, its the entire staff. Even our custodial staff works right along with us to assist the students in any way they can. For instance, if we need a buddy for a child they are right there and they do their part. The cafeteria staff is the same way.

Budget process. Educators indicated that through implementing SBM they “learned to recognize the total needs of the school, ” not just the needs of their own programs or grade levels. One restructuring leader reported they had “saved money by sharing resources, ” Involvement in the budget process helped them “feel ownership in the school, ” However, participants acknowledged the need for them to understand adequately fiscal policies and procedures in order to utilize their resources to the maximum benefit.

In the budget process, teachers decide who needs what most. It is not this selfish attitude that I want a color monitor just to have a color monitor. We find out who

needs what and we work toward that end. That person gets it. That 's the sharing kind of thing we have.

We decided each one of us could decide whether we wanted to use textbooks and how we wanted to spend money as far as resources in our classrooms. Just having that flexibility has made a big difference. It was quite a change when we could start making our own decisions as to how we were going to teach. With that, of course, came a lot of responsibilities and we 've had to keep lots of documentation. I guess that accountability is a big issue.

Planning process. Many restructuring leaders reported that a sound knowledge base is required to make plans and decisions in a SBM environment. Developing a School Improvement Plan and a Differential Pay Plan requires knowledge of areas in which typical classroom teachers are not well-versed. Classroom teachers require training in order to make informed decisions about school curriculum, instruction, and resource management (personnel and budget).

I think one of the things that has been most difficult about it is that we change tests every year. Then we 're constantly having to revise our milestones and our plans because we keep changing the way the state or the school system assessed and that is real frustrating when the measures keep changing. Then you can 't ever determine if you 're making progress because you can 't attribute any plus or minus to your

strategies because changes could be attributed to the fact that you changed the measurement.

I think the thing that is out of control with this is the amount of paperwork and the hoops that we have to jump through in site-based management. People will go through the motions of getting the stuff on paper, but the process that actually occurs may not be what it should be. The importance of site-based management is as much process as anything else. If it becomes a paperwork exercise, the meaning of what should occur will not be there.

One restructuring leader stated emphatically “we are charged with teaching students -- SBM planning is secondary. ” Many restructuring leaders noted that development of the School Improvement Process was so time consuming, it “bogged down” the actual implementation of SBM. Still others indicated they were “writing a plan, but not spending time implementing the plan. ”

SBM Innovations and Changes

Experiences in site-based management which resulted in innovations and changes within the school or school system represented the second category of experiences reported mostly frequently by restructuring leaders. Their involvement in having a real impact on their schools and school systems stood out vividly in their memories,

School operations. Restructuring leaders’ experiences in changing the operations of schools or school systems included the following areas: school calendars, daily schedules,

curriculums, policies, facilities, and climates. A comment made by one leader was indicative of the general tone of the responses: “You don ‘t have to sit back and accept things the way they are -- you need to speak up. ”

Restructuring leaders indicated that changing the school calendar created a sense of “oneness” within the *school*. Faculty, students, and parents worked together to implement this change to allow greater opportunities for students. At the same time, these educators learned a great deal about the complexity of making administrative changes which met the needs of all constituent groups.

Trying to change the schedule was one of the first ones, and what happened, the significant thing that I remember was, that brought this faculty together because everyone had an opinion about it and everybody got passionate about it. For the first time I saw people working together, and pulling together, and people doing research, and people coming up with justifiable reasons for what they thought. I saw people beginning to do what I consider critical thinking and justifying their positions. What I learned from it was, you don ‘t go into something that you ‘re eying to get group consensus on without doing your homework and being well-prepared.

Understanding the needs of students helped many leaders develop alternative curriculums, extra-curricular activities, and rules and regulations which better met the needs of students. The flexibility of site-based management, plus the collaborative approach to leadership have resulted in many innovative programs being developed for students.

We also realized we had a problem with students being tardy to class and we had a faculty group get together. A group of teachers created a tardy center and a tardy policy for kids reporting. Very structured, outlined exactly what was expected, and it was implemented by the faculty. It has really worked; it cut down our tardies. Teachers have been really proud of the fact that we thought of this, we came up with it, we set the policy and the rules, and it has worked.

One of the highs I have gotten out of this is working with some students in a weekly tutorial program that I've implemented at the school. We were also able to get an activity bus for some new students who live in another area and wanted to be involved in activities after school. Now we have many students who are involved in clubs and sports, and who really want to do things. We also started a club for all students, but set it up in a way that gave African-American students some ownership in the school, which was a strategy in our site-based management program. By starting the tutorial program, getting the activity bus, and getting the club, we've been able to provide students with some ownership. They were saying before "you don't want me here." Now that has changed and the attitudes of these students has improved greatly.

New perspectives. Respondents also noted the profound significance of the changing roles and perspectives of central office personnel, principals, and teachers; as well as those of parents and the community. "People are willing to listen and communicate about a plan

that includes them. ” One leader described the challenge in simply changing the nature of meetings from “information sharing to interactive exchange of ideas. ”

One of my roles is to coordinate buses and we are really hurting for drivers. The principal thought let's bring that to the Team. So, I started it off by explaining that we were trying to come up with some strategies where we could recruit and retain bus drivers. The teachers just sat there and nobody had anything to say. So, the principal said “that's that. “ I said no it's not, this is the Team and we need to talk about this since it affects our school and our children. I guess the teachers hadn't bought in to this because they don't look at bus drivers as being part of what they have to deal with and they don't see that bus drivers have anything to do with the learning process. But the bus drivers are very important because we need reliable people to get the kids here. If the kids are not here, then we can't teach them. I guess the lesson I've learned is that even though it maybe a major part of the school system, if people don't deal with something directly, they don't see the importance of it.

Leadership Roles

Restructuring leaders identified developmental experiences in which they had been elected or selected for leadership roles in their schools or school systems almost as frequently as they identified experiences in which they had made an impact on their schools. The leadership roles included chairing school committees, hiring new teachers and administrators,

and leading school restructuring efforts. Respondents often noted that additional information or training would have assisted them in serving in these leadership roles.

Chairing school committees. Restructuring leaders had served as chairpersons of numerous committees, including the overall school committee and numerous subcommittees. These activities were pivotal experiences in their development as leaders. Their experiences with these committees included both positive and negative events. Innovative solutions to curriculum issues, discipline problems, and student activities were generated by these committees, and restructuring leaders frequently reported that “those closest to the issues generated the best solutions.” Access to information, including state laws and local policies, as well as understanding of administrative issues were vital to respondents when serving in these leadership roles, as were strong collaboration and communication skills.

The biggest impact that chairing the alter-naive schedule committee had on me was that I was not aware that it was possible for staff members to act in such a way as to have a significant say so in terms of their own environment. The experience was extraordinarily significant. The thing I remember most about it, the lesson I learned from it, was that if you ‘ve got the right people in the right place at the right time, there is very little that can’t be accomplished. As long as you don ‘t end up butting up against rules and regulations and laws that prohibit you from doing so. We managed to create an awful lot of new stuff in a very short amount of rime.

Chairing the Differentiated Pay Committee has probably been the most frustrating and least rewarding experience because there are so many rules and regulations. Also, it took so much time and the amount of money was so little for the number of hardworking teachers. It couldn't be across the board, it had to somehow be merit gain and we were trying to come up with something that everybody could access equally. We probably came up with a plan that's too complicated, trying to give everybody their fair shot at part of it."

Hiring new teachers and administrators. Many participants who served on selection committees to hire new employees were involved in this process for the first time. Educators on these committees felt a strong sense of accountability for their final decisions. They had vested interests in the success of new personnel in their schools. Being involved in the hiring process helped "establish camaraderie with the new personnel."

This teacher candidate was just out of school, he was young, and he was saying that he knew he was probably not really good, but he was going to be really good. He was so enthusiastic and you could just tell that he really, really wanted the job. I remember thinking that he didn't have as much experience as all the other people, but I liked his attitude. I remember it was neat to have input, to say these are the things I really like about this person and I think he will bring energy and enthusiasm into our department. And he got the job! My principal agreed! He's turned out to be wonderful. He took over the Advanced Placement (AP) course and just about everybody in his class last year got college credit for the AP test. I feel good

knowing that I helped pick him. And, I think that helped me work better with him. He wasn't just somebody that came in at the beginning of the year. You feel more projective of them, or helpful towards them.

I was involved in the interviewing process for the new assistant principal, That was not an easy job for me. I'm a very emotional person and sometimes I have trouble putting my head before my heart, and I didn't particularly like doing that. I felt it was too much responsibility for me, even though it was not my sole responsibility. Sometimes I felt that the responsibility was too great and I was afraid of the repercussions. What if I made a bad decision? What if what I thought really wasn't right?

Leading school restructuring efforts. These leaders had a variety of experiences leading restructuring efforts in their own schools. Some had been involved in consolidating faculties from several schools into one faculty, several had implemented whole language instruction into their curriculums, and others reported their involvement in creating more professional environments.

As the principal, I thought it was important that I back way off and not influence what happened during the SBM process. Those poor teachers floundered forever. They went through pain that they should not have had to experience. They went through being intimidated by one or two teachers. They went through worrying about hurting each other's feelings and not knowing when to speak up. They told me later that I

really let them down, that they needed me more involved than Z was. I guess that gets back to knowing when to step in and when to step out. People look for leadership, but they don't look for dictatorship. As an administrator, you have to be involved, you can't just say go forth and do it. That was probably the most profound thing that I learned.

Professional Development Activities

While fewer restructuring leaders identified these types of experiences as compared to the other categories of developmental experiences, professional development activities were described by respondents as highly significant. Throughout the interviews, restructuring leaders repeatedly indicated that lack of professional development was a critical barrier to implementing site-based management effectively.

Leaders indicated that initial inservice training in site-based management had been meaningful and beneficial experiences for them. These professional development experiences included training in site-based management processes, leadership training, and highly constructive discussions among teachers and administrators focusing on the missions and beliefs of their schools and school systems. Several respondents reported that they had attended meaningful retreats where, for the first time, they had open and honest communication with their colleagues about the goals and objectives of their schools, as well as an opportunity to share their various philosophies of teaching.

After attending a retreat on effective schools, I learned new ways of looking at things. I had my eyes opened to a whole lot of information that I had never been exposed to

before. We get so bogged down in the day to day routine that it's hard to see the big picture. I think that was the first time that I really started thinking about what I believed and what was really going on. Also, that was the first time I think I really learned the value of the involvement of parents. Until that time, I really did not understand how parents and the community could really be positive parts of the process.

Other leaders reported that visits to other sites, including other schools, businesses, and industries, or an exchange of ideas with persons located elsewhere had helped them reinvent their schools as they began to implement SBM. These experiences provided them with opportunities to change the operations of their schools by emulating the highly effective practices of other organizations.

Now, administrators have been doing this for ages, but teachers have never done this before. Our committee visited a particular school to observe something, but they weren't doing that thing the way we perceived it should be done, so we wrote our own plan. While we were there, however, we saw some really neat things we thought another committee might like. The other committee got excited and sent teachers to see what we saw. I found it very exciting to be in someone else's school and see how they handled some of the same things we did and compare their perceptions to ours. The idea that we can go searching for better ideas, that we can get a small idea and investigate it by talking to other schools and then creating something new and different is exciting. I think it has a lot of possibility for the future.

Other leaders indicated that a “lack of training created a cascade of problems and issues.” Clearly, lack of funding for staff development has become a major impediment to the successful implementation of site-based management in many schools.

People just don't know what it means, how to do it, and are not trained in how to work with other adults. They run into brick wall after brick wall because they have to deal with adults now; running meetings and trying to reach consensus. How do you have a good argument? Our people were not ready to handle all the stuff that came down with this. It really goes back to the fact that you cannot train too much. Not just in terms of definitions, but you have to decide on a model of how to decide who decides. You have to take time to build a process. You've got to take time to train the people to be effective leaders and followers, how to be on a team, and how to reach consensus without arguing and getting d. Training really needs to be a focused effort.

Lessons Learned Through Developmental Experiences

The restructuring leaders were asked to reflect on their developmental experiences and elaborate on the critical lessons they had learned from those experiences. The lessons the leaders learned from their experiences were categorized into ten areas. They are identified and described in the order of the relative magnitude of their contributions to the development of the restructuring leaders interviewed in the study.

Collaboration Skills: These lessons included the skills adults need to work with one another in team environments within their schools and school systems.

Stick with the process. If you are going to have participatory decision making, you've got to get the participation before you ever start the decision making. If you don't do that, you're going to have to go back and do damage control. It takes much longer to do that than it does to stick to the process initially, People have got to be kept involved and informed. People do tend to support what they help create. You bring them along by staying with the process of input and feedback. It takes time, but when you don't do that it takes more time in the long run. Pay now or pay later. When you pay later, you pay interest . . . always.

Communication Skills: The lessons learned here related to verbal and written communication skills, as well as effective listening skills.

One of the major things we had to do was to learn to listen to others and accept differences among people. You have to learn that everyone will not always agree with your ideas and that you don't get hostile when that happens. When disagreement occurs, you still have to be able to talk about those things and sometimes you can bring others around to see you're trying to get away from traditional activities because of the population that you're working with now. We are all different, but we can accept those differences and move on in a positive direction.

Decision Making Skills: These lessons focused on the ability to make sound decisions based on the information available.

As an administrator, what I learned was that when we started doing SBM, I was getting a lot of good feedback from the staff. Kind of a wow, this is really neat. You

mean you 're really going to let us decide this stuff? We don 't mind meeting until 5:30 if we 're really doing something. Those reactions are short-lived and they learn the reality real quick. They realize how much work it is and that it takes a lot of rime to do all this good stuff. They have these meetings and make these decisions, and sometimes they wish theyweren 't even on the leadership team because they start to catch some of the flack for the things that get done. They find themselves having to make tough decisions that affect real people.

Management Skills: These lessons were related to basic management and administration skills needed for smooth operations in public schools and school systems.

Learn how to delegate without feeling guilty. That's probably a hard lesson for teachers because they are so used to being independent and doing everything themselves and counting on themselves to get things done. Don 't feel guilty about delegating what they signed up to do anyway.

Time Management Skills: The lessons learned here were primarily in relation to the inadequate time available to function effectively in a site-based management environment and the criticality of time management skills.

Teachers are giving up their planning time, their afternoons, and their nights to be mini-administrators. We do nor have a structure in place where reachers are allowed the time to do this extra work. If you 're serious about site-based management, there needs to be a cadre of individuals in a school who have significant release time, as in

a lead teacher model. You just can't ask teachers to do these new things without giving them time to do it.

SBM Process Skills: These lessons were specifically indicative of the skills needed to respond to the mandates of the School Improvement Process, including both planning and implementation phases.

The process can't be rushed. Real change involves consensus building and that's a very time consuming process. I learned through this process that unless people believe in their hearts, change isn't going to happen. You can't mandate the type of change we are talking about. The time and energy we expended coming to a consensus about what we believe and what vision we have for our school was very necessary and created a strong base for us to proceed. Translating beliefs and vision into concrete changes is equally time consuming.

Leadership Skills: The lessons in this area pertained to the importance of leadership and motivational skills in site-based management environments.

The leader is just so, so important. There is a real paradigm change, however, from the supervisory model, which I had been taught, to a team model . . . much more participatory. In the supervisory model, you are in charge of it all, give directions, and follow up all the time. That appeared to be power, but in essence it was not. Actually, when I share my power I think I have more power. But the fact is a leader must be a leader . . . the leader guides, the leader massages, the leader provides challenges, the leader doesn't let the team stop growing.

Community Relations Skills: These lessons were associated with skills professionals need to work with groups outside the school, including parents, school boards, advisory councils, and representatives from business and industry.

I was talking to people who were talking about businesses, community life, and different cultures. It was a really exciting experience. It was what I had always imagined that being in a board room must be like. Disagreeing, arguing, compromising, researching, and coming up with something really special that would have extremely positive educational value and change our lives and the lives of the persons that we were teaching and touching in the community. This was really the height of what site-based management is all about.

Accountability: Restructuring leaders in this category learned about being accountable for the consequences of their decisions and actions.

It's important to acknowledge and celebrate success. Where that happens, people tend to be more supportive. But you've got to be able to see some success as a result of all this energy and activity involved with site-based management or participatory decision making. You've got to see some successes and some results. That has to be recognized and, for lack of a better word, celebrated.

Professional Development: These lessons addressed the need to include meaningful professional development activities during efforts to implement site-based management.

We were going to redesign the schedule, and we were also going to redesign our instructional delivery and I don't think we had the follow through on that. We got

caught up in the showy things, the changing of the schedule. And it looks good that you're doing something, but when the teachers shut their doors, even though we 've gone to longer periods now, I don 't think a lot has changed in their classrooms. The teachers who lectured before still lecture. The teachers who did worksheets still do worksheets. We really fell short as a system on that because that's another area that we were promised some staff development that we did not get.

Conclusions and Recommendations

After examining the findings of this qualitative investigation, members of the Study Group met to discuss the implications of these findings for teacher and administrator preparation programs in institutions of higher education. One key recommendation formulated by the group was that Colleges of Education review existing undergraduate and graduate curricula for both teachers and administrators and infuse site-based management competencies as appropriate.

The profile of developmental experiences and critical lessons learned from those experiences by the restructuring leaders who participated in this study provides the framework for implementing this recommendation. In essence, the lessons are competencies for the preparation of educational leaders and can be used conveniently by faculty members to examine the extent to which these competencies are addressed within their various programs. In the event that certain competencies are not addressed in a particular curriculum, faculty can infuse those competencies in a manner most appropriate for that particular curriculum. Perhaps more importantly, the categories of developmental

experiences can be used by faculty to evaluate existing and design new developmental student learning experiences for the purpose of developing or reinforcing the competencies experientially and, therefore, better prepare as teachers and administrators to function in site-based management environments. Study Group members believed strongly that students should develop these competencies through a planned series of developmental experiences that span a significant portion of the time they are involved in their programs. The members felt that it was extremely important that efforts to develop these competencies not be reduced to a single course or, worse, to a lecture or discussion within a single course. They felt that in order to prepare students properly, the developmental approach was essential and that the approach should involve planned developmental experiences in local schools. Their shared perception was that teachers and administrators in many of the area schools would be highly interested in working with the College in a collaborative manner to accomplish the intent of this recommendation.

Another recommendation made by the Study Group was that Colleges of Education, in order to improve the public schools, develop educational leaders committed to collaboration. The Study Group included this recommendation to address the important role and responsibility of the Colleges of Education in efforts to improve the public schools. School improvement, and the concomitant improvement of student performance, represent the fundamental impetus for implementing site-based management. It is important to note that site-based management does not directly affect students or their academic performance. Rather, it affects students indirectly through their teachers, administrators, and school

environments. Effective site-based management directly affects the professional lives of school teachers and administrators. It can have a profound effect on their perceptions of their profession, their perceptions of themselves as professionals, and their professional self-esteem. This study clearly illustrated that in schools successfully implementing this new management paradigm, the perceptions of both teachers and administrators were changed in positive and unalterable ways. Teachers and other school leaders who acquire a genuine sense of empowerment and a belief that they can truly make a difference in the lives of students contribute enormously to the improvement of the public schools. By developing teachers and administrators who are true restructuring leaders committed to collaborative improvement for the benefit of students, Colleges of Education can make a vital contribution to school improvement.

Author's Note: A copy of the full report, [Implications of Site-Based Management for the Preparation of Public School Teachers and Administrators in North Carolina](#), is available from Dr. O'Brien. All quotes within the manuscript are verbatim from participants. All participants were guaranteed confidentiality, and therefore are not identified.

Helping Students Learn and Learn How to Learn in the Context of
Health Occupations Instruction

Kenneth A. Kiewra¹

Dorothy Witmer

Abstract: Students are rarely taught how to learn. They are taught content such as science and math but rarely how to learn such content. In health occupations, as in all areas, instructors can help students learn by embedding strategy instruction within their courses. To do so, instructors must first understand a few learning principles. With these principles, **instructors** can design instruction consistent with the ways learners should learn. Using these **learner-compatible methods**, instructors can teach students how to learn. This instruction is accomplished by overtly modeling learner **strategies**, describing their **benefit**, and providing students with opportunities to practice the strategies across settings. **Producing** learners who can learn *is an important* part of preparing health occupations students to meet the expectations and demands awaiting them as health occupations providers.

¹ Kenneth A. Kiewra, Ph.D., is Professor of Educational Psychology, University of Nebraska-Lincoln, Lincoln, NE; Dorothy Witmer, R. N., Ed.D., is Supervisor of Health Occupations Education, Idaho Division of Vocational Education, *Boise, W.*

Health occupations teachers spend considerable time preparing to teach their students, but how many **prepare** their lessons to ensure that students actually learn the content? Going one step further, how many teachers teach their students how to learn this content? We think that effective instruction should have two components. One, it should be learner-compatible, presented in a manner commensurate with how students learn. When this occurs, students are apt to learn in spite of themselves. Two, effective instruction should also teach learners how to learn, such that they become autonomous learners capable of learning regardless of the nature of instruction. In order for instructors to teach in a learner-compatible way and to teach students how to learn, they must understand several principles of learning. This article presents several important learning principles and their implications for designing learner-compatible instruction. The article concludes with a discussion of how instructors can teach their students how to learn within the context of health occupations courses.

Principles of Learning

Several principles guide effective learning. These learning principles, of course, have implications for developing learner-compatible instruction. In this section we describe each principle and explain its implications for instruction.

Principle 1: Learning is Controllable

Both teachers and learners have considerable influence over how information is learned. Figure 1 shows how one aspect of learning--perception--is controllable. Read the message in

Figure 1 aloud, then look at it a second time and count each word. Most people originally read, “I love Paris in the spring,” and then count seven words. But the phrase, “I love Paris in the spring,” has only six words. What happens in such a case? Look back to Figure 1 and you will notice that the word *the* appears twice. Perception/learning of the information is influenced by the instructions received.

On the first occasion, the instructions are to read. In this reading, many readers do not focus on individual words, but seek to extract meaning. They do just that when they miss the extra *the*. On the second occasion, however, the instructions are to count the words, which forces readers to pay attention to each word individually. Although there is only one message, it can be perceived two different ways according to the instructions.

Figure 1

A demonstration that learning is controllable

I LOVE
PARIS IN THE
THE SPRING

In educational settings, students and teachers continually influence how information is learned. For example, a teacher who provides students with behavioral objectives prompts them to focus on selected aspects of the presented information. Also, students who study information over

several settings rather than in mass learn more information. Certain methods of learning and instruction are more compatible with our learning system than others and therefore lead to greater learning. The remaining principles have implications for improving instruction and student learning.

Principle 2 Attention is Selective

Imagine being at a party and talking to a colleague. As you talk, your attention shifts about the room. You notice someone with a lampshade on his head. You see another person inadvertently drop a potato chip, look around, and then quite advertently squash it into the carpet with the heel of his shoe so that no one will notice it. You smell the host's dog, which needs bathing. You hear that Bob is splitting from Carol; Ted is leaving Alice; Bob is not interested in Alice; Carol is intrigued by Ted, and Ted is interested in Bob. There are, however, many more available conversations and observable incidents that you do not notice at this party.

Whether at a party, a ball game or in a classroom people are confronted with a host of possible stimuli (i.e., incidents, messages). Some stimuli are selected for processing, such as the person with the lampshade, but most encountered stimuli are not selected for our attention. Information that is selected is further processed and committed to memory (i.e., learned). For example, you might think that the lampshade person looks and acts like your Uncle Harvey. Making this connection helps you remember the incident. Alternatively, information that is not selected for attention is forever lost and never learned

In a classroom there are many stimuli competing for students' selective attention. Like the party, a student can switch his attention from the teacher to a conversation between other students to a poster on the wall to a swinging leg in the chair in front of him. An effective instructor can do several things, however, to command students' selective attention. One, an instructor can use distinctive stimuli. For example, occasionally using different colored chalk or speaking in a near whisper is likely to command students' attention. A photograph of decaying teeth and gums is also likely to command the attention of health occupation students learning about oral hygiene. Two, familiar stimuli can be used. Relating new information to students or to famous people is attention-producing. An instructor describing a human's recuperative power can relate the story of cyclist Greg LeMond who recovered from a near fatal hunting accident and subsequently won the grueling Tour de France bicycle race. Three, movement commands attention. It is virtually impossible not to follow movement. Effective teachers move about the classroom and use hand and facial gestures. They discourage other types of movement in the classroom and encourage students to sit toward the front where less potential distractions exist.

Last, and most importantly, effective instructors can tell students what to select. Oftentimes students try to learn, but fail to select the most important ideas for further processing. Writing crucial information on the board or supplying it on a handout helps students know what is important. Behavioral objectives and prequestions also point students toward important ideas. Skeletal notes--an outline of the lecture's main points with space between ideas for note taking--

also aid attention and result in more complete note taking (Kiewra & Frank, 1988). Finally, instructors can **train** students to focus on *alert words* in lecture and text that signal importance (e.g., the words *primary* and *significant*) and relations among ideas. Words such as *first*, *next*, *then*, and *phases* signal sequential relations among ideas. Words such as *types*, *parts*, *components*, and *kinds* signal hierarchical relations among ideas. Words like *similar*, *different*, *contrast*, and *whereas* signal coordinate relations among ideas. Instructors should incorporate alert words when teaching. Speaking about teeth, for example, the instructor might say, “There are three *types* of teeth: incisor, cuspid, and molar. Each of these can be *compared* with respect to location, appearance, number, and purpose.” This statement alerts students to important ideas and their relations.

Principle 3: Working Memory is Limited

Information that is attended to selectively is stored momentarily in what is called working memory. The function of working memory is to hold temporarily the attended information while it is being considered, manipulated along with other incoming information and with past knowledge stored in long-term memory. For example, a health occupations student who is roughly determining a patient’s caloric intake for a meal must store in working memory each of the foods eaten (incoming information) and the average calories per food item (information retrieved from long-term memory), then calculate in working memory the number of calories consumed.

This and similar tasks are difficult because of the **limited** capacity of working memory.

Working memory is limited in the amount of information that can be stored and worked on.

Students are **limited** to working with approximately five to seven bits of information at any one time. However, these bits of information can be quite large. For example, a **chess** novice quickly exposed to 10 pieces on a chess board has **difficulty** remembering the locations of those 10 pieces. An **expert, meanwhile**, does not see 10 distinct bits of information but instantaneously recognizes two or three **larger patterns**. The expert, who *has the same* working-memory capacity as the novice, uses that capacity more **efficiently** by **chunking** the pieces into a few familiar patterns.

The relation between working-memory capacity and background knowledge is also seen in the task of reading. If a student reading a passage about diabetes is unfamiliar with terms such as *insulin shock*, *carbohydrate* and *acetone*, then she must use working-memory capacity for determining the meaning of individual words rather than for higher-level processes such as relating ideas to one another the way a more knowledgeable student is apt to do.

It is evident, then, that limited working-memory capacity is less of a problem for students with sufficient knowledge than for those without. **Instructors** should, therefore, be certain that students have adequate **knowledge** and skills to approach the new learning task. A student who cannot automatically classify foods into categories such as protein, carbohydrate and fat when planning a weekly menu uses valuable working-memory resources classifying foods instead of orchestrating a balanced and satisfying menu.

More directly, instructors can aid students by providing them with organized knowledge. Students, then, do not have to allocate memory resources organizing the information themselves. In the next section, specific suggestions are given for aiding organization.

A final way that instructors can help students compensate for the limits of working memory is by encouraging them to record complete notes and/or by supplementing student notes with notes provided by the instructor (Kiewra, 1985). Because working-memory capacity is limited to only a few bits of information, new information entering working memory “pushes out” the old information which is then forgotten. That is why students must realize the limits of their memory system and record complete lecture notes. It is difficult, however, for a student to attend simultaneously to both the lecture and note taking. Therefore, instructors can minimize demands on students’ working memory by providing lecture notes or at least critical tables, figures, and graphs that need not be copied while they are being explained. It is virtually impossible, for example, for students to copy a graph depicting increases in drug usage, that is projected on a screen, while simultaneously recording the lecturer’s statements about a drug’s effects. In this case, the instructor should provide a copy of the graph that can be studied after the lecture when time is available for committing the information to long-term memory.

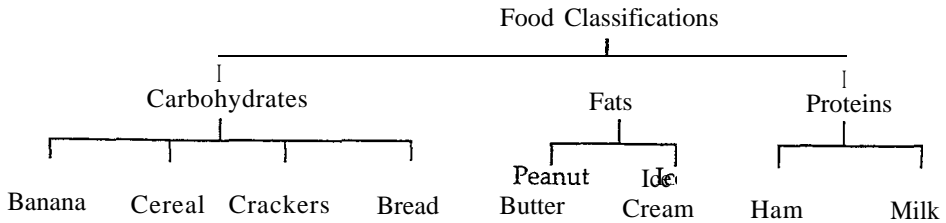
Principle 4 Internal Connections Facilitate Learning

In order for students to understand and remember information, they must identify or build relations among presented ideas (Mayer, 1984). These relations are called internal connections

because they exist within the learning material- For example, suppose a student had to learn the following list of foods: peanut butter, banana, ice cream, cereal, ham, milk, crackers, and bread. his list is learned more easily if it is organized in such a way that the items are related to each other. One method involves relating them by eating preference. You might group peanut butter and crackers; cereal, bananas, and **milk**; ham and **bread**; with ice cream for dessert. Alternatively, you might group them by their predominant classification: carbohydrate, **fat**, or protein as was done in Figure 2.

Figure 2

A hierarchical classification of foods



Organizing information has three advantages. One, the information is stored more economically in memory. Two, the information is easier to **retrieve** from long-term memory because there are multiple retrieval pathways for locating it. For example, recalling the superordinate category carbohydrate helps in recalling the term **bread**. Similarly, the term milk, having been previously associated with ham, aids in the recall of ham. Three, the information is better understood. You know, for example, that bananas, cereal, crackers and bread are all

carbohydrates and therefore share certain properties. In addition, these finds are different from the other foods falling under the classification of fats or proteins.

A most effective organizational device for identifying and understanding similarities and differences among ideas is a matrix (Kiewra, DuBois, Christian, & McShane, 1988; Kiewra, DuBois, Christian, McShane, Meyerhoffer, & Roskelley, 1991). A matrix, like the one presented in Figure 3 on diabetes, is a more effective structure for presenting comparative information than an outline which lists information sequentially and discourages comparisons between topics.

One advantage of the matrix is that notes are always well organized regardless of the original learning material. Organized information is generally easier to learn. Second, the matrix structure encourages students to build both vertical within-topic connections and horizontal across-topic connections. For example, in the diabetes matrix you can study information about the topic, diabetic coma, vertically and see that several aspects associated with diabetic coma are slow, including onset, behavior, pulse, and response. Furthermore you might relate the fact that overeating could generally slow the activities of the diabetic approaching coma. In terms of horizontal (across-topic) connections, it is evident that many factors relating to hypoglycemia (e.g., onset, behavior, pulse, and response) are rapid and easy to detect whereas factors associated with hyperglycemia are slower and harder to detect. A third advantage of the matrix structure is that missing information is evident such as the missing information about breathing in Figure 3.

Instructors can present information to students in a matrix form. Alternatively, instructors can provide students with a matrix framework prior to a lecture or an assigned reading and have students complete the matrix. An example is seen in Figure 4. This latter method probably boosts attention too as students become more involved in selecting critical information.

Figure 3

A matrix showing symptoms of diabetic insulin shock and diabetic coma

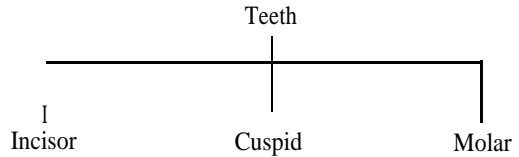
	Diabetic Insulin Shock (hypoglycemia)	Diabetic Coma (hyperglycemia)
Possible Causes:	1. Too much insulin 2. Excessive exercise 3. Insufficient carbohydrate intake	1. Too little insulin 2. Infection 3. Overeating
Onset:	Sudden	slow
Behavior:	Irritable, excited, hungry	Sluggish
skin:	Cold, clammy, pale	Hot, dry, flushed
Breathing		Deep, finity odor
Pulse:	Rapid, thready	Normal to slower
Urine:	No glucose, no acetone	Acetone present
Treatment/Response	Sugar given—fast	Insulin given—slow

Principle 5: External Connections Facilitate Learning

External connections involve relating the new information to previous knowledge stored in memory. This process makes the new information more meaningful and aids retrieval because additional pathways to the information are developed. For example, students learning the

Figure 4

Matrix framework for noting information about teeth



Location:

Appearance:

Number:

Purpose:

information about diabetes might relate diabetic symptoms to symptoms previously learned about heart attacks. Students might also list names of people/patients known to have diabetes. These connections impose further meaning on the new material by relating it to familiar information. The new material can also now be accessed via information about heart attacks and names of people who have diabetes.

External connections are incorporated readily into a matrix representation. The matrix appearing in Figure 3, for example, can be extended horizontally by adding the topic of “heart attack,” and extended vertically by adding the subtopic “patients” (see Figure 5). Information about the causes, onset, and behavior. . . of heart attacks is included in the right-most column of

Figure 5

A matrix for making external connections for insulin shock and diabetic coma

	Diabetic Insulin Shock (hypoglycemia)	Diabetic Coma (hyperglycemia)
Possible causes:	<ol style="list-style-type: none"> 1. Too much insulin 2. Excessive exercise 3. Insufficient carbohydrate intake 	<ol style="list-style-type: none"> 1. Too little insulin 2. Infection 3. Overeating
Onset:	Sudden	slow
Behavior:	Irritable, excited, hungry	Sluggish
skin:	Cold, clammy, pale (Abet-to Salazar)	Hot, dry, flushed
Breathing		Deep, fruity odor
Pulse:	Rapid, thready	Normal to slower
Urine:	No glucose, no acetone	Acetone present
Treatment/ Response:	Sugar given—fast	Insulin given-slow
Patients:		

Figure 5 where it is easily compared to the symptoms of diabetes. The names of patients who have experienced diabetic insulin shock or diabetic coma are included in the figure's first two columns, respectively. In addition, information within the cells of the matrix can also be connected to familiar information. For instance, the cold and clammy skin characteristics associated with hypoglycemia can be related to personal knowledge about marathon runner **Alberto Salazar**. After

winning the Boston Marathon, Salazar's body temperature dipped below 90 degrees and his skin was described as clammy and pale. Salazar was suffering from hypoglycemia.

Teachers can help students build external connections in several ways. Instructors can provide a variety of examples, generate analogies and metaphors, relate material to past learning, and draw conclusions and implications. Students can also be instructed to raise and answer “why” questions about what is being learned (Pressley, Wood, Woloshyn, Martin, King, & Menke, 1982). For instance, when learning that a fruity odor occurs when a hyperglycemic patient breathes, the student should ask why this is so rather than memorize this information as a fact.

Principle 6 Prior Knowledge is the Basis for New Learning

One of the keys to effective learning and memory is the hooking of new information to prior knowledge. This premise, of course, presupposes that prior knowledge exists. For instance, students may be asked to read the following passage and to remember as much of it as possible.

After checking the log it was obvious that I had been doing far too much LSD. As a result my max $\dot{V}O_2$ was bound to suffer. It was obviously a time to attempt some fartleking.

Although students have no difficulty reading this passage, chances are they do not know what it is about. They might be able to memorize it word-for-word with sufficient time, but would still be unable to recall it in a meaningful fashion. For example, they probably would not know how the log revealed too much LSD. If they have difficulty remembering this passage about

running it is because they lack the prior knowledge in memory **necessary** to form meaningful external connections. One must understand, for example, that a log is a journal in which workout records are **kept**; LSD is the acronym for **long**, slow distance; and that **fartleking** is a Swedish word meaning speed play. **With** prior knowledge, students can now understand **that this** particular runner was aware she **had** been running too slowly and was **perhaps** losing her stamina. **She** planned a **fartlek** workout (involving a combination of slow and fast running) to boost aerobic fitness.

Instructors not only should be sure students have relevant background knowledge, but should help them to use such knowledge. This can be accomplished by providing learners with overviews in advance of reading assignments and lectures (Mayer, 1979), reviewing previous ideas or basic skills before presenting new knowledge or skills (**Gagne**, 1977), or by using frequent testing as a means for keeping students' background knowledge current and usable. Instructors should encourage students to review their lecture notes regularly, read corresponding text materials concurrently with lectures, and ask questions of teachers and fellow **students** when they need more information. Students reading a passage about exercise, for example, should inquire about vocabulary such as *aerobic capacity* and *maximum oxygen intake* if these terms are not clearly defined in the text.

Principle 7: Retrieval is Cue Dependent

Information is likely to be learned when it is selected for **further** attention, when internal connections **are** made among to-be- learned ideas, and when external connections are made between the to-be-learned information and previous knowledge. A rich store of background knowledge helps in forming external **connections**. Although these ideas are central to learning information, oftentimes the problem is not learning information but later retrieving it from memory. Fortunately, teachers can do things to facilitate retrieval among their students.

Retrieving information from memory depends upon having an appropriate cue to activate the memory, just like a certain key is needed for opening a particular lock. The following demonstration suggests what type of cue will best aid **retrieval**.

Suppose students were instructed to learn a long list of paired associates like the following:

- skunk -- Table
- tree -- Pillow
- spoon -- Radio

A few days later they are asked to recall the capitalized words. As cues for retrieval they are either given the original unassociated cue words (skunk, tree, spoon) or semantically related cues such as chair (for table), sleep (for pillow), and music (for radio). In which of these cases would recall of the capitalized words be best? Contrary to popular belief, experimental results have confined that recall is best when the original **retrieval** cues are provided (Tulving & Osler, 1968; Tulving &

Thomson, 1973). Recall from memory is facilitated when the cues originally associated with the information are made available at recall.

This principle is the basis for a person tying a string around his finger in order to remember picking up the dry cleaning after work. When first placed around the finger, the string is associated with the dry cleaning. Later, the string is a retrieval cue for remembering the dry cleaning. This principle also explains why one readily recognizes his dentist in her office, but not in the grocery store. The dentist is learned among cues associated with dentistry and subsequently recalled best when these same cues are reinstated at retrieval.

In academic settings, however, students do not always have effective retrieval cues available at testing. The obvious danger is that test questions will fail to cue learned responses just as the dentist herself did when witnessed in the grocery store. Research has demonstrated (Barclay, Bransford, Franks, McCarrell, & Nitsch, 1974), for example, that students who learn the sentence, "The man tuned the piano," can generally recall that sentence when later given the retrieval cue, "Do you remember hearing about something that makes nice sounds?" The retrieval cue, "Do you remember hearing about something heavy?" however, is ineffective, even though every one knows that a piano is heavy. If students instead learn the sentence, "The man lifted the piano," then the cue ". . . something heavy?" is effective; whereas the cue, ". . . makes nice sounds?" is ineffective. In both cases, students learned, but learning was only observed when a cue consistent with the method of learning was available.

The same sort of retrieval problem can easily occur among health care professionals. We know a young doctor who was unable to diagnose his own case of shingles. His inability to diagnose the disease occurred because he originally learned to diagnose the disease in its more advanced stages and among elderly patients where it is more common.

Because students must be able to recall information in a variety of situations and in connection with multiple cues (e.g., among young and elderly patients and in early and late stages), it is important for students to build multiple pathways to the information while learning it. Students who build internal and external connections while learning are, by definition, creating multiple retrieval pathways to the new information. The ability to diagnose shingles, for example, is maximized by having studied shingles among related skin disorders such as chicken pox and herpes, and by encountering a range of examples showing shingles among varying aged patients and in varying stages.

Instructors can also help students build more appropriate cues by providing them with knowledge about the testing situation. Students preparing for a test on diabetes, for example, could be told whether they will be given a learned symptom and asked to state the associated complication of diabetes, or whether they will be required to simply name all symptoms given a complication of diabetes. These two tests offer very different retrieval contexts and suggest different learning strategies. In the first test, the critical information itself is offered as cues for recognizing diabetic insulin shock or diabetic coma. Learning, therefore, involves matching each

symptom to its superordinate category. In the ~~second~~, more difficult ~~test~~, the superordinate categories (diabetic insulin shock and diabetic coma) are the retrieval cues for recalling the subordinate information. Learning here involves practicing the recall of symptoms given the superordinate categories. Of course, a third test might involve presenting previously ~~unencountered~~ descriptions of patients' symptoms (as retrieval cues) and having students identify the complication of diabetes. This ~~still-more-difficult~~ test requires students to practice ~~identifying~~ a range of examples for each symptom.

Teaching Learners to Learn

To this point, key aspects of learning have been discussed along with their implications for instruction and learning. The hope is that instructors will design instruction so that students learn in learner-compatible ways. Although these suggestions will aid student learning, they ~~will~~ not necessarily teach students how to learn. In ~~fact~~, a student provided with a matrix might do better on a forthcoming test, but not understand how the matrix helped nor be able to ~~generate~~ a matrix subsequently.

The importance of teaching students how to learn is recognized in the health occupations community. Employers want employees who know how to learn in order to meet the changing requirements of their jobs (The Secretary's Committee on Achieving Necessary Skills, 1992). Unfortunately, learning skills are often unsatisfactory among high school and college graduates

(Lynton, 1989; The Commission on the Skills of the American Workforce, 1990). There is a growing need to teach students how to learn.

Fortunately, instructors who teach in learner-compatible ways are just a few simple steps from teaching learners how to learn. Teaching students how to learn can occur simultaneously with learner-compatible instruction over a period of time. An instructor teaching in a learner-compatible way simply explains what he is doing, why he is doing it, and provides classroom opportunities for students to acquire the skill gradually. For example, when providing students with information in a matrix form, the students are told explicitly about how the matrix was formed (i.e., the topics were placed on top, the subtopics along the left side, and the details within the matrix cells), and why it is beneficial (i.e., for seeing relations both within and across topics). In subsequent situations the students might be given only the framework of the matrix (i.e., topics and subtopics) and asked to fill in the details. Later, students might be prompted to find topics, subtopics, and details for a given unit of information. Through these experiences the skill of generating matrices is gradually transferred from the instructor to the students until the students can spontaneously and autonomously generate a matrix and identify the within-topic and across-topic relations. In summary, an effective instructor teaches learners how to learn by teaching in a learner-compatible manner and by making his techniques and rationales explicit through talking aloud. The effective instructor also provides multiple opportunities for students to

learn and automatize the skills/principles gradually through successive exposure and practice.

Practice should occur in multiple contexts (e.g., with various content in various courses).

This approach to teaching learners how to learn is similar to that used by a tradesperson to teach an apprentice on the job. As a job is being carried out by the tradesperson, she explains to the apprentice how and why it is done in this way. Then the apprentice is gradually given opportunities to apply the skills under the watchful eye of the tradesperson who now supplies helpful feedback about the apprentice's performance. When learning strategies are taught in this way, there is no need for a separate class in how to learn. Learning how to learn occurs on the job as the instructor presents course content.

If students are to be autonomous learners, then there is one last skill that must be learned beyond those mentioned previously. Students must monitor their own learning. Good instructors, teaching in a learner-compatible way, monitor student learning by asking such questions as, "What did you record in your notes? How did you read your textbook? Why did you use that technique? How will you learn that information? Did you make effective internal and external connections? Do you have adequate background knowledge? Do you understand?" Ultimately, however, if students are to be autonomous, they must monitor their own learning as would an effective instructor. The problem is that learners typically do not ask themselves about their own learning. They wait for instructors to ask them. Until they are tested, many students do not know that they do not know. Of course, then, it is too late.

This self-monitoring skill is also taught to students by embedding it into the context of the course. When teaching students content through the use of a matrix, for example, the instructor can model self-monitoring by asking such things as: “Have I found all the topics and subtopics? Do I see how these topics are similar and different? Can I think of novel examples for these new concepts?” The instructor should explicitly draw students’ attention to self-monitoring behavior and explain how and why it is done.

Self-monitoring cannot be fully valuable unless the student knows the learning principles discussed previously. What good is it for a student to know that she does not understand a reading passage, for example, unless she knows why she does not understand (e.g., internal connections among ideas are not yet apparent) and is able to do something about it (e.g., generate a matrix set of notes)? Therefore, it is best to teach learning principles/strategies and self-monitoring simultaneously.

Conclusion

The goals of education should be to teach students content and how to learn such content-Health occupations instructors who understand learning principles and who teach in learner-compatible ways are likely to meet the goal of teaching content effectively. When health occupations instructors make learning principles apparent to students and have students practice strategies derived from learning principles, then health occupations instructors are likely to meet the second goal of teaching learners how to learn. Learners who can learn will perform at a high level

in school and be prepared to meet the expectations and demands of employers in the health care industry.

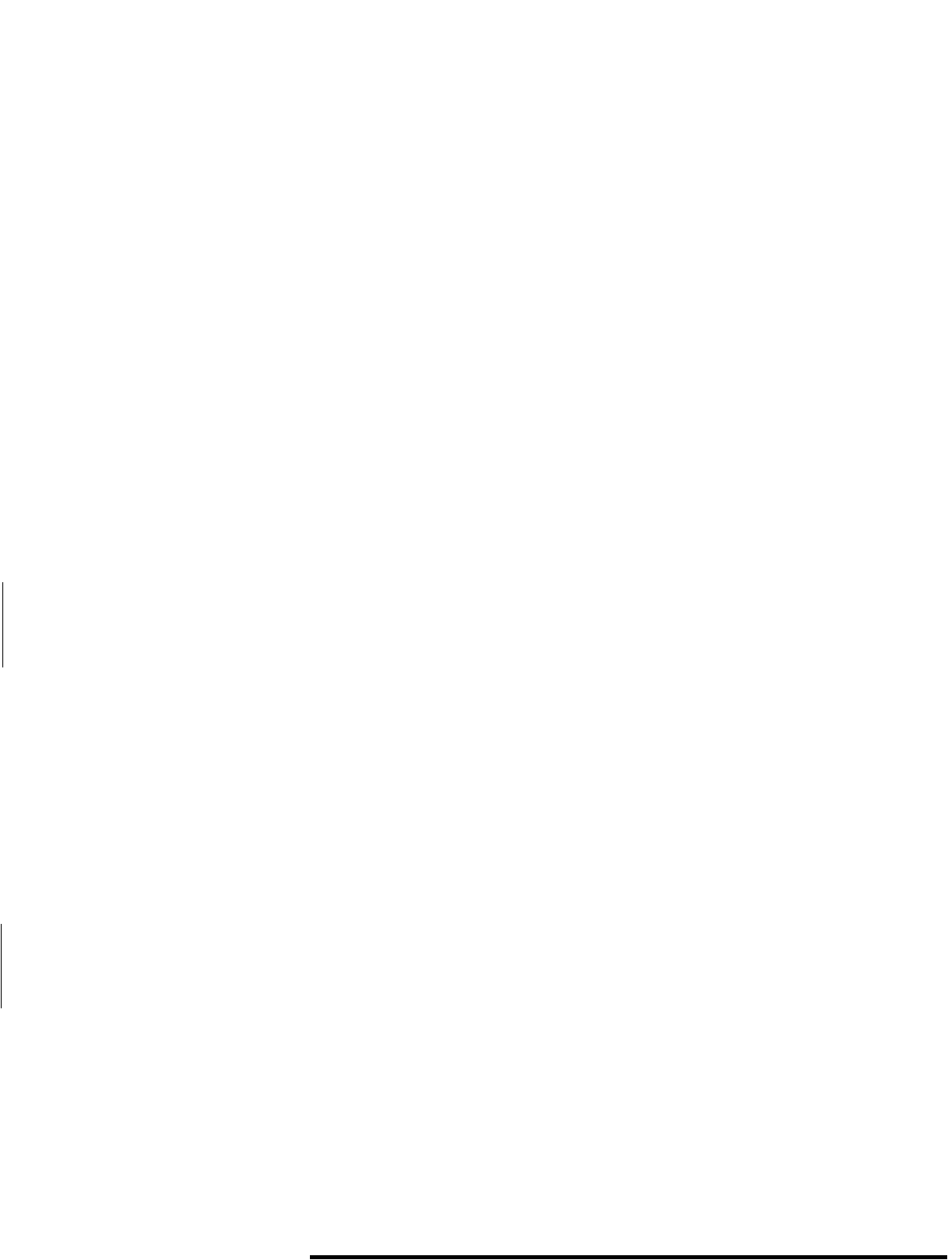
References

- Barclay, J. R., Bransford, J. D., Franks, J. J., McCarrell, N. S., & Nitsch, K. E. (1974). Comprehension and semantic flexibility. Journal of Verbal Learning and Verbal Behavior, 13, 471-481.
- Gagne, R. M. (1977). The conditions of learning (3rd ed.). New York: Holt, Rinehart and Winston.
- Kiewra, K. A. (1985). Students' notetaking behaviors and the efficacy of providing the instructor's notes for review. Contemporary Educational Psychology, 10, 378-386.
- Kiewra, K. A., DuBois, N. F., Christian, D., & McShane, A. (1988). providing study notes: A comparison of three types of notes for review. Journal of Educational Psychology, 80, 595-597.
- Kiewra, K. A., DuBois, N. F., Christian, D., McShane, A., Meyerhoffer, M. & Roskelley, D. (1991). Notetaking functions and techniques. Journal of Educational Psychology, 83, 240-245.
- Kiewra, K. A., & Frank, B. M. (1988). The encoding and external-storage effects of personal lecture notes, skeletal notes, and detailed notes for field-independent and field-dependent learners. Journal of Educational Research, 81, 143-148.
- Lynton, E. A. (1989). Higher Education and American Competitiveness. Rochester: National Center on Education and the Economy.
- Mayer, R. E. (1979). Can advance organizers influence meaningful learning. Review of Educational Research, 49, 371-383.
- Mayer, R. E. (1984). Aids to text comprehension. Educational Psychologist, 19, 30-42.
- The Commission on the Skills of the American Workforce. (1990). America's choice: High skills or low wages. Rochester National Center on Education and the Economy.

The Secretary's Commission on Achieving Necessary Skills, U.S. Department of Labor. (1992). Learning a living: A blueprint for high performance. (ISBN 0-16-037908-3) Washington: U.S. Government Printing Office.

Tulving, E., & Osler, S. (1968). Effectiveness of retrieval cues in memory for words. Journal of Experimental Psychology, 77, 593-601.

Tulving, E., & Thomson, D. M. (1973). Encoding specificity and retrieval processes in episodic memory. Psychological Review, 80, 352-373.



Journal of Health Occupations Education

Editorial Policy: The Journal of Health Occupations Education, an official publication of the Health Occupations Education Division of AVA, was developed to facilitate communication among members of the profession on current methods of research and findings in the field, on current program trends and issues in health care, and on media resources which have an impact on health occupations education. Contributed manuscripts are considered for publication in the categories of research, non-research informative articles, and media resources. Policy regarding submission of manuscripts is non-restrictive. All materials are reviewed internally as well as reviewed by a panel of peers. No payment is made to authors. The Journal does not assess cost of complex tables, charts, and figures. The views expressed in the Journal of Health Occupations Education are those of the authors and do not necessarily represent an official position of the Health Occupations Education Division.

Subscriptions: Individuals or institutions may subscribe to the Journal at a cost of \$20 for HOE-AVA members and \$25 for nonmembers. Other countries, add \$10 per year postage. Single copies or back issues, when available, may be purchased for \$15 each. Checks should be made payable to the Journal of Health Occupations Education. Subscriptions and change of address notice should be sent to Managing Editor six weeks in advance of effective date. Please include old and new addresses with zip codes. Undelivered issues are not the responsibility of the publisher.

Duplication: Educators are authorized to reproduce a single article from this publication without making a written request provided that (a) duplication is for an educational purpose in a nonprofit institution, (b) copies are made available without charge beyond the cost of the reproduction, and (c) each copy includes full citation of the source. Permission to reproduce more than one article will be granted under the same conditions to those who make a reasonable request in writing. This authorization does not apply to material copyrighted by others. Any such materials are so identified.

Specification: Authors should submit one camera ready original and three copies of the research or non-research paper of approximately 30 pages or less including an abstract of 150 words or less. All papers should be prestige elite typed and double spaced on bond paper, with margins of one inch on all sides. Tables should be numbered, titled, cited, and inserted in the text. References should begin at the end of the text on the same page. A separate cover page should include the title of the article and name, position, institution, address, and telephone number of the author(s) to allow manuscripts to be reviewed confidentially. The research paper should include and abstract; introduction; need for study; purpose(s) of study with objectives and/or research question; methodology to include sample, instrumentation with validity and reliability, and data analysis; results and discussion; and conclusions and recommendations. Media resources such as video tapes and book reviews should be of interest to the readers. Include the title, author(s), date of publication, city, state, publisher, and number of pages. This review should include a description of the purpose, and objective summary, and judgments of implications, value, and applicability of the content on one page. The Publications Manual of the American Psychological Association (APA), Third Edition, should be used for style of writing. Prospective authors are invited to contact the Editor to receive copies of manuscript and media resource guidelines or to inquire about the suitability of submissions they are considering. Manuscripts and media resource should be submitted to the Editor for publication consideration.

Beverly Richards, Managing Editor
Journal of Health Occupations Education
College of Education and Psychology
North Carolina State University
Box 7801
Raleigh, NC 27695-7801