

Allied Health Care Employees' Workplace Skills and Competencies: Are They Prepared?

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Abstract

The purpose of this study was to determine the extent to which allied health care providers considered the Secretary's Commission on Achieving Necessary Skills (SCANS, 1991) and competencies as those that are necessary for entry level employment in the allied health care industry. The extent that allied health care supervisors and managers perceived their entry level employees as sufficiently possessing SCANS skills and competencies was also determined. Existing differences between the two data sets were then examined. This study suggested that the workplace basic skills and competencies identified in the SCANS report were perceived to be valid and necessary for the allied health care industry. Furthermore, the study indicated that "skill gaps" exist between perceived allied health care industry requirements and perceived entry level skills and competencies of entry level employees.

Introduction

Students' preparation for the future requires that educators know and understand the skills, knowledge, attitudes, and abilities their students need to become literate, contributing citizens who can earn an adequate income in the world that awaits them upon graduation (Adler, 1982). Beginning with *A Nation at Risk* (The National Commission on Excellence in Education, 1983) and several other reports issued in the early 1980's, public and political pressures gained momentum in calling for reform at all levels of education. One of the major issues at that time, and continuing into the 21st century, was the concern that "graduates did not have the skills and abilities needed in the workplace" (Huba & Freed, 2000, p. 16).

Within the last fifteen years, major issues concerning health care reform have gained attention as well. Influenced by the biotechnology revolution, contemporary issues in health care and related education include: (a) "How will health care be delivered?", and (b) "What will be required of providers in this new delivery?" (Van Servellen, 1997, p. xiii). Brower, Walker, and Wichowski (1996) stated, "High performance jobs require high performance workers, who are products of high

performance schoolhouses” (p. 233). These include semi-skilled and skilled technicians with knowledge, skills, and attitudes to be productive workers in the 21st century. Herschbach (1996) suggested that jobs require employees to possess several different kinds of skills. These include basic skills in reading and mathematics; reasoning skills, such as critical thinking and problem-solving; job-specific skills, including techniques and processes applied in specific work settings; psychomotor skills including the manipulation of tools, equipment, and machinery; and affective skills, including work habits, attitudes, values, and beliefs concerning work. Additionally, Packer and Pines (1996) suggested that frontline workers must be problem solvers and decision makers who can communicate clearly and possess the personal characteristics to work well with others. Workplace know-how, the ability to use one’s mind, will continue to replace physical prowess as the primary prerequisite for obtaining a job and earning a decent income (Toffler, 1990).

Considering this shift towards more knowledge-based occupations, two questions emerge: (a) What specific set of basic skills and competencies do these occupations require? and (b) Are potential employees within these categories being adequately prepared? The answers to both of these questions are important for occupational curriculum developers and instructors to know and understand as they prepare students for future employment. According to Saveri (1991), identification of the critical workplace basic skills and competencies for the 21st century “must be the foundation of training and educational programs for workers in the next decade” (p. 150). Joyce and Voytek (1996) concluded that, “Young people will not be able to find jobs unless they are well-educated and skilled” (p. 32).

Although business and industry in America have always found it necessary to provide for various employee training (Denison, 1985), the current rise in the percent of total payroll expenditures can be attributed to recent industrial and occupational shifts from labor intensive to mind intensive jobs (Cappelli et al., 1997; Carnevale, 1998; Gray & Herr, 1998; Packer & Pines, 1996). The top-down management method of organizing the workforce as heralded by Frederick Taylor (1919/1998) during most of the 20th century, whereby, unskilled labor was organized and directed by a few college-educated thinkers and planners, no longer exists in corporate America (Postrel, 1998).

Furthermore, employment trends have moved dramatically toward the need for better prepared professionals, technicians, administration, and support occupations (Carnevale, 1998). “Nowadays, pretty much everyone gets paid for thinking” (Postrel, 1998, p. A5), and employers have become more dependent upon their employees’ knowledge for maintaining and increasing productivity and profitability (Wirth, 1992). Unfortunately, according to O’Neil (1997), most of the new skills and abilities being demanded by business and industry were not emphasized in the past, therefore, were not learned on the job or taught in the classroom. This has left workers lacking in the full range of skills necessary to operate effectively in high-performance jobs (Commission on the Skills of the American Workforce, 1990).

Doing more of the same, educationally, certainly is not a solution. Extended school days and longer school years have not had the effect expected in the preparation of high school graduates. The solution lies in the ability to ensure that new employees possess the skills needed to assume increased responsibilities in this time of change, and that incumbent workers receive the necessary, timely training in newly required skills and competencies.

Nature of the Problem

Many of today's hospitals have streamlined staffs that provide a broad spectrum of care services to patients. Differentiated staffing patterns, utilizing nursing and technical assistants, require employees to have multi-skills or be cross-trained (Acello, 2000) and be able to function effectively in an interprofessional health care team environment (Erickson, McHarney-Brown, Seeger, & Kaufman, 1998). Each of these changes has led to a new focus on the quality of the patient-provider relationship as the crucial component of the new, emerging health care delivery system (Del Mar, 1994). It has also led to changes in the preparation of health care professionals, especially in rural areas. In reviewing the collaboration efforts of academic institutions with community-based partners for developing allied health care workers, Guion, Mishoe, Taft, and Campbell (2006) found interdisciplinary coursework, technician-patient interactions, community collaborations, and integrated team culture to be common program areas. Such delivery systems that focus on managed health care require interfacility communication and cooperation, multi-level intervention, alternative health care approaches, and health care providers to possess teamwork and problem solving skills (Acello, 2000; Van Servellen, 1997). Allied health care providers include those individuals who generally require state licensure and are graduates of either two-year or four-year preparation programs. Particular fields in allied health include dietetics, clinical laboratory, medical records, physical and occupational therapy, radiology, respiratory therapy, and speech-language pathology and audiology (O'Toole, 1997).

A comprehensive list of job-specific technical skills including techniques and processes required of technologists in each allied health care field is available in publications such as the *Dictionary of Occupational Titles* (U. S. Department of Labor, 1991). Unfortunately, a similar list of non-technical basic skills and competencies (i.e., basic skills in reading and mathematics; reasoning skills, such as critical thinking and problem solving; and affective skills, including work habits, attitudes, and values and beliefs concerning work) is not available. This lack of information is problematic for educators. As Joyce and Voytek (1996) asked, "How can educators prepare young people for the workplace when employers can't agree on the skills they want workers to possess?" (p. 31). It is almost impossible to develop proper workplace basic skills training and applicable education programs without an essential identification, definition, and agreement of the relative skills in question (Darrah, 1991). This sentiment was echoed by Buchan and Dal Paz (2002) in their study of skills within the

health care workforce, "...determining the skill mix and defining roles in the health care workforce will continue to present a major challenge to health professionals, managers, and policy-makers" (p. 579). Nevertheless, the field must strive continuously to determine precisely what skills are important in the workplace (Hull, 1995).

Perhaps the most extensive attempt to identify workplace basic skills was the Secretary's Commission on Achieving Necessary Skills (SCANS, 1991) established by the United States Department of Labor. The SCANS Commission, composed of 30 representatives from education, business, labor, and state government was charged with defining a common core of skills that constitute job readiness in the economic environment. Specifically, the SCANS report identified essential foundation skills as follows: *Basic Skills* (Reading, Writing, Arithmetic/Mathematics, Listening, Speaking); *Thinking Skills* (Creative Thinking, Decision Making, Problem Solving, Conceptualizing, Knowing How To Learn, Reasoning); and *Personal Qualities* (Responsibility, Self-Esteem, Sociability, Self-Management, Integrity/Honesty). Additionally, workforce competencies were identified as: *Resource Competencies* (Time, Money, Materials and Facility Resources, Human Resources); *Interpersonal Competencies* (Participates as a Member of a Team, Teaches Others New Skills, Serves Clients/Customers, Exercises Leadership, Negotiates, Works with Diversity); *Information Competencies* (Acquires and Evaluates Information, Organizes and Maintains Information, Interprets and Communicates Information, Uses Computers to Process Information); *Systems Competencies* (Understands Systems, Monitors and Corrects Performance, Improves or Designs Systems); and *Technology Competencies* (Selects Technology, Applies Technology to Task, Maintains and Troubleshoots Equipment). Accordingly, the SCANS skills and competencies have been perceived as the skills that employers want, and have served as a foundation to develop workplace skills curriculum.

Purpose and Research Questions

The purpose of this study was to determine the extent to which allied health care supervisors and managers considered each of the SCANS skills and competencies as necessary for entry level employment in the allied health care industry. Additionally, the study determined the extent that allied health care supervisors and managers perceived their entry level employees to possess sufficiently the SCANS skills and competencies. The differences between perceived allied health care industry requirements and employees' entry level skills and competencies were also examined.

The specific research questions posited for this study included:

1. To what extent do allied health care supervisors and managers consider each of the SCANS skills and competencies necessary for entry level employment in the allied health care industry?

2. To what extent do allied health care supervisors and managers perceive their entry level employees to possess sufficiently the SCANS skills and competencies?
3. To what extent do differences exist between supervisors' and managers' perceptions of allied health care industry requirements and supervisors' and managers' perceptions regarding the skills and competencies of entry level employees?

Methodology

Population and Sample

The population for this study was the allied health care supervisors and managers in hospitals in the state of Nevada. A purposive sample included 224 supervisors and managers of eight allied health departments in 28 hospitals representing small (22 respondents), medium (16 respondents), and large (32 respondents) hospitals in urban and rural settings. Of the 224 surveys mailed to allied health care department supervisors and managers, 70 surveys were completed and returned, yielding a return rate of 31.3%.

Instrumentation

Since SCANS (1991, p. ix) issued a challenge to "test their conclusions" without adequately providing a subsequent and appropriate instrument, a questionnaire was developed based upon Wallen and Fraenkel's (1991) suggested guidelines for constructing survey instruments. Content validity was established by incorporating the actual categories and wording used in the SCANS report into the questionnaire. Face validity was established through a review of the instrument by a panel of experts in survey research, allied health care, and education at the University of Nevada, Las Vegas. The final survey instrument included 35 items with respect to the 15 skill domains and 20 competency domains identified in the SCANS report. The internal consistency reliability of the instrument using Cronbach's coefficient alpha was estimated to be $\alpha = .76$.

Data Collection and Analysis

The survey instrument was designed to elicit responses concerning (a) each respondent's perceptions regarding the skills and competencies identified in SCANS as necessary for entry level employment as allied health care providers, and (b) the extent to which respondents perceived that their entry level employees possessed SCANS skills and competencies. Each question required two responses. All subjects in the sample were asked to indicate how necessary they perceived each of the skills and competencies was for allied health care employees. A 4-point Likert-type scale with ratings ranging from 0 (*unnecessary*) to 3 (*very necessary*) was used to collect the data. Using a second column, the employers were asked to provide a percentage

(0% – 100%) estimate regarding their perceptions of the extent to which their entry level employees possessed the skills and competencies.

Survey packets were mailed to 224 allied health care supervisors and managers in 28 hospitals. Follow-up telephone calls were made approximately two weeks after the survey was mailed to increase the response rate. The data analysis was accomplished using the Statistical Packages for the Social Sciences (SPSS, 2000). Frequencies, means, ranges, standard deviations, and percentages were calculated to provide descriptive and comparative data and answer each of the research questions.

Findings

Seventy surveys (31% response rate) were returned that provided responses from each of the identified allied health care fields from small, medium, and large hospitals. As a group, more than 92% of the respondents agreed that both the SCANS workplace skills and competencies were necessary for entry level employment. Further analysis revealed that all 35 skills and competencies were deemed either necessary or very necessary by at least 50% of the respondents (see Table 1).

Table 1
Respondents' Perceived Importance of SCANS Skills and Competencies for Entry Level Allied Health Care Employment

Skills and Competencies	Percent of Respondents Rating Necessary or Very Necessary	Mean	S.D.
Reading	100.0%	2.97	.17
Listening	100.0%	2.97	.17
Integrity/honesty	100.0%	2.96	.20
Serve clients/customers	100.0%	2.94	.23
Problem solving	100.0%	2.91	.28
Participate as a member of a team	100.0%	2.91	.28
Decision making	100.0%	2.89	.32
Works with diversity	100.0%	2.89	.32
Speaking	100.0%	2.87	.34
Interpret /communicate information	98.6%	2.83	.42
Writing	98.6%	2.81	.43
Self-management	100.0%	2.80	.40
Organize and maintain information	98.6%	2.77	.46
Acquire and evaluate information	98.6%	2.76	.47
Teach others new skills	98.6%	2.70	.49

Table 1 (continued)

Skills and Competencies	Percent of Respondents Rating Necessary or Very Necessary	Mean	S.D.
Allocate time	97.0%	2.69	.53
Knowing how to learn	100.0%	2.69	.47
Sociability	100.0%	2.64	.48
Reasoning	95.7%	2.64	.57
Use computers to process information	91.4%	2.59	.65
Self-esteem	98.6%	2.57	.53
Conceptualizing	91.4%	2.44	.65
Creative thinking	98.6%	2.38	.52
Apply technology to task	90.0%	2.37	.66
Arithmetic/mathematics	92.9%	2.37	.62
Understand systems	87.1%	2.33	.70
Monitor and correct performance	84.2%	2.30	.77
Maintain and troubleshoot equipment	78.6%	2.23	.78
Exercise leadership	88.6%	2.27	.70
Negotiate	81.4%	2.26	.79
Improve or design systems	81.4%	2.21	.81
Select technology	77.1%	2.07	.80
Allocate materials and facility resources	78.5%	2.01	.79
Allocate human resources	75.7%	1.93	.84
Allocate money	50.0%	1.50	.97

Using a percentage estimate, ranging from a low of 0% to a high of 100%, the allied health care supervisors and managers were asked the extent to which they perceived their entry level employees as sufficiently possessing the SCANS skills and competencies. Only two skills, reading and integrity or honesty, were perceived to be sufficient by greater than 90% of entry level employees (see Table 2). However, 20 SCANS skills and competencies were deemed sufficiently possessed by 80 to 90% of entry level employees (see Table 2). Conversely, 20 to 30% of those employees entering the allied health care industry (see Table 3) were perceived to be lacking in eight of the necessary SCANS skills and competencies. Table 3 denotes the seven necessary SCANS competencies deemed to be possessed insufficiently by 30% or more of employees entering the allied health care industry. Using the two sets of data, existing differences between perceived allied health care industry requirements and the perceived skills and competencies of entry level employees were determined. These differences are presented in Table 4.

Table 2
*Skills and Competencies Perceived to be Possessed Sufficiently by Employees
 Entering the Allied Health Care Industry*

Skills and Competencies	Response Frequency	Range	Mean	S. D.	Employee Percentage
Basic Skills					
Reading	65	20%-100%	94.8	13.7	>90%
Writing	63	10%-100%	88.3	17.0	80-90%
Arithmetic/mathematics	63	10%-100%	86.7	22.5	80-90%
Listening	64	20%-100%	89.2	14.0	80-90%
Speaking	63	10%-100%	88.2	14.6	80-90%
Thinking Skills					
Decision making	63	5%-100%	81.6	21.1	80-90%
Problem solving	64	10%-100%	80.9	18.8	80-90%
Knowing how to learn	63	20%-100%	84.5	17.8	80-90%
Reasoning	60	10%-100%	81.3	21.3	80-90%
Personal Qualities					
Integrity or honesty	64	20%-100%	91.2	12.9	>90%
Self-esteem	62	0%-100%	82.0	18.3	80-90%
Sociability	63	20%-100%	86.0	13.8	80-90%
Self-management	64	10%-100%	80.6	17.5	80-90%
Interpersonal Competencies					
Participate as a member of a team	63	0%-100%	84.0	18.9	80-90%
Serve clients/customers	63	5%-100%	89.4	16.0	80-90%
Work with diversity	63	30%-100%	89.3	15.8	80-90%
Acquire and evaluate information	63	10%-100%	81.5	20.4	80-90%
Organize and maintain information	62	10%-100%	82.7	18.4	80-90%
Interpret and communicate information	63	10%-100%	81.9	19.8	80-90%
Use computers to process information	64	5%-100%	81.6	20.3	80-90%

Table 3
*Skills and Competencies Deemed to be Possessed Insufficiently by Employees
 Entering the Allied Health Care Industry*

Skills and Competencies	Response Frequency	Range	Mean	S. D.	Employee Percentage
Thinking Skills					
Creative thinking	63	0%-100%	75.5	21.6	20-30%
Conceptualizing	61	10%-100%	78.2	21.8	20-30%
Resource Competencies					
Allocate time	64	0%-100%	77.7	19.2	20-30%
Allocate money	55	0%-100%	53.9	33.8	≥30%
Allocate materials/facility resources	60	0%-100%	67.1	26.9	≥30%
Allocate human resources	59	2%-100%	65.9	26.3	≥30%
Interpersonal Competencies					
Teach others new skills	63	10%-100%	78.1	23.7	20-30%
Exercise leadership	61	2%-100%	70.3	26.4	20-30%
Negotiate	59	0%-100%	67.0	24.1	≥30%
Systems Competencies					
Understand systems	61	10%-100%	72.8	22.1	20-30%
Monitor and correct performance	61	20%-100%	71.6	23.3	20-30%
Improve or design systems	61	10%-100%	64.5	24.5	≥30%
Technology Competencies					
Apply technology to task	63	10%-100%	71.1	24.9	20-30%
Select technology	58	1%-100%	64.1	26.3	≥30%
Maintain and troubleshoot equipment	63	0%-100%	60.6	27.6	≥30%

An analysis of the data revealed differences between what employers perceived as necessary for entry level employment and the abilities possessed by their entry level employees for 34 of the 35 SCANS skills. Consequently, an apparent skills gap exists between the skills and competencies regarded as necessary in hospitals and those skills possessed by new employees. Although it might be argued that a small difference in these two grouped responses may be of little concern, the question regarding how large a difference need there be to cause concern remains. Certainly, in an industry so essential to the human endeavor as health care, one might become concerned with even minimal differences.

Table 4
Differences Between Employers' Perceived Allied Health Care Industry Requirements and the Perceived Skills and Competencies of Entry Level Employees

Basic Skills and Competencies	Valid N	Perceived as either Necessary or Very Necessary	Perceived Employee Skills	Difference
Creative thinking	65	98.6%	75.5%	-23.1%
Teach others new skills	63	98.6%	78.1%	-20.5%
Self-management	64	100.0%	80.6%	-19.4%
Allocate time	64	97.0%	77.7%	-19.3%
Problem solving	64	100.0%	80.9%	-19.1%
Maintain and troubleshoot equipment	63	78.6%	60.6%	-18.0%
Apply technology to task	63	90.0%	71.1%	-18.9%
Decision making	63	100.0%	81.6%	-18.4%
Exercise leadership	61	88.6%	70.3%	-18.3%
Acquire and evaluate information	63	98.6%	81.5%	-17.1%
Improve or design systems	61	81.4%	64.5%	-16.9%
Interpret and communicate information	63	98.6%	81.9%	-16.7%
Self-esteem	62	98.6%	82.2%	-16.4%
Participate as a member of a team	63	100.0%	84.0%	-16.0%
Organize and maintain information	62	98.6%	82.7%	-15.9%
Knowing how to learn	63	100.0%	84.5%	-15.5%
Reasoning	60	95.7%	81.3%	-14.4%
Negotiate	59	81.4%	67.0%	-14.4%
Understand systems	61	87.1%	72.8%	-14.3%
Sociability	63	100.0%	86.0%	-14.0%
Conceptualizing	61	91.4%	78.2%	-13.2%
Select technology	58	77.1%	64.1%	-13.0%
Monitor and correct performance	61	84.2%	71.6%	-12.6%
Speaking	63	100.0%	88.2%	-11.8%
Allocate materials and facility resources	60	78.5%	67.1%	-11.4%
Listening	64	100.0%	89.2%	-10.8%
Work with diversity	63	100.0%	89.3%	-10.7%
Serve clients/customers	63	100.0%	89.4%	-10.6%

Table 4 (continued)

Basic Skills and Competencies	Valid N	Perceived as either Necessary or Very Necessary	Perceived Employee Skills	Difference
Writing	63	98.6%	88.3%	-10.3%
Use computers to process information	64	91.4%	81.6%	- 9.8%
Allocate human resources	59	75.7%	65.9%	- 9.8%
Integrity/honesty	64	100.0%	91.2%	- 8.8%
Arithmetic/mathematics	63	92.9%	86.7%	- 6.2%
Reading	65	100.0%	94.8%	- 5.2%
Allocate money	55	50.0%	53.9%	+ 3.9%

Finally, more than 98% of the supervisors and managers responding to the survey rated the SCANS skills and competencies as necessary or very necessary for their hospitals’ productivity; 100% of those responding rated the skills and competencies as necessary or very necessary for profitability. If, indeed, this is the case, then the perceived “skills gaps” should provide good reason for hospital administrators and allied health care supervisors and managers to have concern. Clearly, when the SCANS skills and competencies are important to a hospital’s productivity and profitability, pre-employment preparation and/or inservice training activities that include the skills and competencies are justified.

Conclusions

Although the findings have limited generalizability, it is clear that the SCANS skills and competencies are valid for the allied health care industry, at least, in the hospital settings included in this study. Furthermore, the agreement among respondents provides some response to the lack of any specific list of workplace basic skills and competencies for industry trainers and pre-employment educators. This validation of the information in the SCANS skills and competencies provides support for their inclusion in allied health care pre-employment preparation and inservice programs.

“Of the three traditional capital components of national wealth (natural resources, capital/technology, and labor), labor or human capital is considered the most important” (Gray & Herr, 1998, p. 63). The pivotal point is that the quality of the workforce will determine the degree to which natural resources and capital/technology can be used to their fullest potential. During the last two decades, the federal and state governments have encouraged significant reforms in the linkages between education, training, and employment to maintain or enhance the nation’s economic competitiveness. “A significant component of these reforms has been a focus on defining competencies seen

as necessary to enable individual workers to perform their daily tasks more efficiently and thereby achieving greater productivity” (O’Neil, 1997, p. 122).

Although limited in scope, this study provides some validation to the applicability of the SCANS skills and competencies within the allied health care industry. More than 92% of the allied health care employers who responded to the survey considered SCANS as those skills and competencies needed for entry level employment. It is also meaningful to note that over 98% of the respondents considered SCANS skills and competencies to be necessary or very necessary for their hospitals’ productivity. Additionally, with the exception of two respondents who stated they were nonprofit hospitals, all of the other respondents reported that their entry level employees’ abilities were either necessary or very necessary for their hospitals’ profitability.

Furthermore, these findings support the literature (Baloun, 1995; Cappelli et al., 1997; O’Connor, 1993; O’Neil, 1992; Richens & McClain, 2000) that has consistently reported concerns regarding the existence of a “skills gap” between those skills and competencies regarded as necessary in the workplace and those skills and competencies possessed by new employees. This study clearly identified the existence of these “gaps” for allied health care entry level employees. Whether or not the magnitude of the gaps identified were sufficient to cause concern was not within the scope or limits of the study.

Implications and Recommendations

Identification of the critical workplace basic skills and competencies for the 21st century “must be the foundation of training and educational programs for workers in the next decade” (Saveri, 1991, p. 150). Thus, the significance of this study lends itself to the importance of creating SCANS-related curriculum and training techniques useful in the preparation of allied health care professionals. A valid identification of workplace basic skills and competencies required within the allied health care industry provides educators, employers, policymakers, and others with a better understanding of employees’ needs. Additionally, personnel who are involved in the pre-employment or inservice development of allied health care providers can use the findings in developing a clearer picture of the workplace basic skills and competencies required of their students and/or employees. Consequently, allied health care educators should add relevant employability skills and competencies to their curricula. Furthermore, since there is an important link between the basic skills of a firm’s workforce and its ability to improve productivity (Joyce & Voytek, 1996), businesses employing allied health care providers are more than likely to benefit from curricula modifications derived from this study.

This study, like most studies, had several limitations. For example, the study included only allied health care providers who were employed in hospitals and identified as dietitians, laboratory therapists, medical records personnel, occupational

therapists, radiology technologists, respiratory therapists, and speech/language and audiology therapists. Therefore, the ability to generalize the findings to other allied health care providers is limited. Additionally, this study included only major medical facilities (i.e., hospitals) in Nevada that have multiple departments or units and employ a variety of allied health care providers. Also, physician offices and single purpose clinics were not included. Consequently, the generalizability of the findings to allied health care providers of smaller or different facilities is also limited. Further, the study was limited by the knowledge and perceptions of the individuals responding to the survey.

Accordingly, based on the findings, conclusions, and limitations of the study, the following recommendations are offered:

- The findings of the study provide a strong rationale for the development of SCANS-related curriculum and training techniques for allied health care education and training programs. This study made no attempt to determine which technical skills should be taught in any particular allied health care educational program. However, the results should be used to strongly support the need for including pre-employment instruction for workplace readiness skills including communication skills, decision making and problem solving skills, personal skills (integrity/honesty and self-management), and skills in sociability/team membership.
- Public educational agencies involved in the preparation of allied health care professionals should develop workplace readiness curricula and instructional models based upon the skills and competencies identified in the SCANS report.
- Employers should develop inservice and other employer-supported educational programs so that employees can develop work-related SCANS skills and competencies, especially for those skills that are directly related to productivity and profitability.
- Future research related to SCANS skills and competencies should include each specific health care occupation and larger populations and samples of subjects.

References

- Acello, B. (2000). *Advanced skills for health care providers*. Albany, NY: Delmar.
- Adler, M. J. (1982). *The paideia proposal*. New York, NY: MacMillan.
- Baloun, T. L. (1995). The skills gap. *Adult Learning*, 6(6), 23-24.
- Brower, E. B., Walker, T. J., & Wichowski, C. P. (1996). The high performance schoolhouse: A means/ends discussion on academic and vocational education. In Campbell, C. P. (Ed.). *Education and Training for Work*, 2, 233-259. Lancaster, PA: Technomic Publishing Co.

- Buchan, J., & Dal Paz, M. (2002). Skill mix in the health care workforce: Reviewing the evidence. *Bulletin of the World Health Organization* 2002, 80, 575-580.
- Cappelli, P., Bassi, L., Katz, H., Knoke, D., Osterman, P., & Useem, M. (1997). *Change at work*. New York, NY: Oxford University Press.
- Carnevale, A. P. (1998). *Education and training for America's future*. Washington, DC: The Manufacturing Institute.
- Commission on the Skills of the American Workforce. (1990). *America's choice: High skills or low wages!* NY: National Center for Education and the Economy.
- Darrah, C. N. (1991). *Workplace skills in context*. Unpublished manuscript, San Jose State University, Department of Anthropology and Cybernetic Systems.
- Del Mar, C. (1994). Communicating well in general practice. *The Medical Journal of Australia*, 60, 367-370.
- Denison, E. F. (1985). *Trends in American economic growth*. Washington, DC: The Brookings Institute.
- Erickson, B., & McHarney-Brown, C., Seeger, K., & Kaufman, A. (1998). Overcoming barriers to interpersonal health sciences education. *Education for Health: Change in Training and Practice*, 11, 143-149.
- Gray, K., & Herr, E. (1998). *Workforce education: The basics*. Needham Heights, MA: Allyn & Bacon.
- Guion, K., Mishoe, S., Taft, A., & Campbell, C. (2006). Connecting allied health students to rural communities. *The Journal of Rural Health*, 22, 260-263.
- Herschbach, D. R. (1996). The content of instruction. In C. P. Campbell (Ed.), *Education and training for work*, 1, 109-132. Lancaster, PA: Technomic Publishing Co.
- Huba, M., & Freed, J. (2000). *Learner-centered assessment on college campuses: Shifting the focus from teaching to learning*. Needham Heights, MA: Allyn & Bacon.
- Joyce, P., & Voytek, K. (1996, May). Navigating the new workplace. *Vocational Education Journal*, 71(5), 30-48.
- O'Connor, P. J. (1993). Getting down to basics. *Training & Development Journal*, 48(7), 62-64.
- O'Neil, J. (1992). Preparing for the changing workplace. *Educational Leadership*, 49(6), 6-9.
- O'Neil, J. (1997). How businesses search for qualified applicants: Trying to bridge the skills gap. *Personnel Journal*, 71(6) 1-2.
- O'Toole, M. T. (1997). *Encyclopedia and dictionary of medicine, nursing, and allied health* (6th ed.). Philadelphia, PA: W. B. Saunders.

- Packer, A. H., & Pines, M. W. (1996). *School to work*. Princeton, NJ: Eye on Education.
- Postrel, V. (1998, September 4). The work ethic, redefined. *The Wall Street Journal*, p. A5.
- Richens, G., & McClain, C. (2000). Workplace basic skills for the new millennium. *Journal of Adult Education*, 28 (1), 29-34.
- Saveri, A. (1991). The realignment of workers and work in the 1990s. In Jean M. Kummerow (Ed.), *New directions in career planning and the workplace: Practical strategies for counselors* (pp. 117 -153). Palo Alto, CA: Consulting Psychologists Press.
- Secretary's Commission on Achieving Necessary Skills. (1991). *What work requires of schools: A SCANS report for America 2000*. Washington, DC: U.S. Department of Labor.
- Statistical Packages for the Social Sciences. (2000). *SPSS graduate pack 10.0 for Windows*. Chicago, IL: SPSS, Inc.
- Taylor, F. (1998). *The principles of scientific management*. New York: Dover Publications. (Original work published 1919)
- The National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform*. Washington, DC: U.S. Government Printing Office.
- Toffler, A. (1990). *Powershift: Knowledge, wealth, and violence at the edge of the 21st century*. New York: Bantam Books.
- U. S. Department of Labor (1991). *Dictionary of occupational titles, 4th ed.* Washington, DC: U.S. Government Printing Office.
- Van Servellen, G. (1997). *Communication skills for the health care provider: Concepts and techniques*. Gaithersburg, MD: Aspen.
- Wallen, N., & Fraenkel, J. (1991). *Educational research: A guide to the process*. New York: McGraw-Hill.
- Wirth, A. G. (1992). *Education and work for the year 2000: Choices we face*. San Francisco, CA: Jossey-Bass Publishers.

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