

Critical Skills Needed:  
How IT Professionals Can Strengthen the Nursing Profession

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## Introduction

When one thinks of information technology (IT) end-users, the first group that always comes to mind is nurses. No? They should be. New graduates of undergraduate nursing programs are moving into a decidedly technical world when they seek their first nursing positions. The education they receive to prepare them for these positions must include the skills necessary to work in this highly computerized environment (Ellis & Hartley, 2001). However, undergraduate nursing programs frequently do not include any IT courses in the curriculum.

So to meet this need for IT courses, who better to offer them than IT faculty? Yet, these nursing students may not benefit from the typical basic computer course that many business students take. Nurses may need IT courses designed especially to meet their unique needs. In order to develop effective curricula, IT faculty need to know what IT skills nurses are expected to have when entering the job market.

## Purpose of the Study

Nursing informatics is a specialty area that combines computer science, information processing theory, and nursing science to facilitate management and processing of nursing-related data, information and knowledge to support nursing information and understanding to derive clinical decisions (Graves & Corcoran, 1989). According to the American Nursing Informatics Association (2002), nursing informatics is a specialty area obtained at the post-baccalaureate level.

With the nursing shortage at a critical level across the United States, not all nurses choose to pursue higher degrees and specialty areas as they can achieve outstanding positions without them. The purpose of this study was to determine what IT skills are considered critical skills, as perceived by nursing administrators, for any new nurse entering the workforce.

## Review of Literature

According to Russell and Alpay (2000), a substantial number of nurses have not yet acquired adequate knowledge of information technology. To combat that problem, the National League for Nursing (2002) has made “infusing technology into concepts, structures, and processes of nursing education” one of the nursing education research priorities to ensure competency of nursing graduates for the 21<sup>st</sup> century practice.

Several studies have addressed various issues of incorporating information technology in the nursing profession. Saranto and Leion-Kilpi (1997) used the Delphi technique to identify and describe the computer skills required in nursing. Consensus had to be reached among 15 experts from four groups: clinical nurse managers, patients, nurse educators, and student nurses for the findings to be included in the study. The authors found that the experts reached consensus in four content areas. The first area was system security, which included knowing the importance of passwords and knowing the laws concerning data security and patients’ rights. The second area of consensus was the ability to resolve error issues, which included being aware of viruses and knowing what the different error messages mean. The third area of consensus was obstacles and

prerequisites of automated data processing, which included developing a positive attitude toward computers and being familiar with ergonomic recommendations. The fourth area of consensus was the ability to use hospital information systems, which included knowing how to retrieve patient information and knowing how to generate a nursing care plan.

Another study on nursing and information technology (Sinclair & Gardner, 1999) focused on the IT knowledge, attitudes, and experience of two cohorts of nursing students when entering their university courses. One group entered in 1997 and one group entered in 1998. The researchers asked each cohort of nursing students to complete a questionnaire which included answering biographical data questions, a self-assessment of competence, a computer competence test, and an attitude toward IT scale. In terms of perceived IT competence, the authors found that there were no significant differences between the two groups in the proportions of students who claimed to have low, medium, or high competence in applications such as word processing, spreadsheets, and databases.

In the computer competence section of the questionnaire, the cohorts were asked to complete a 16-item multiple-choice test. The score for the combined cohorts was just short of the 16 maximum. This score reinforced the cohorts' self-perception that they were competent in computers. For the attitude assessment section, the cohorts completed a 20-item attitude scale. No significant difference was found between the two cohorts. The high mean score of the two groups showed a positive motivation toward using computers. Using this information the authors recommended that core IT competencies should be identified and all courses should have the clear objective of raising students' confidence in using computers.

The focus of Russell and Alpay's (2000) study was to determine what nurses used the computer for, how they used it, and what the training needs were. Questionnaires were sent to 225 practice nurses in England. The authors discovered that the main use of the computer was for maintenance of medical records. Half of the nurses used the computer to manage appointments and for clinical coding. Half of the nurses said they had the computer continually in use during their shift, and half wanted more time available to spend using the computer. Training in basic IT skills appeared to be minimal as less than 5 percent of the nurses had received training in using any of the categories investigated including word processing, email, and Internet.

One of the interesting notes about these three studies is that they are all internationally-based studies. One was completed in Finland while the other two were in England. No study found to date has focused on the IT skills of U.S. nurses. Yet, according to Simpson (2000), for nursing to thrive, it "had better embrace IT and begin shaping it to nursing's changing needs."

## Research Questions

The questions that guided this study were as follows:

1. What types of software skills are critical skills for new nurses entering the field?
2. Is knowledge of nursing-specific software critical for new nurses entering the field?

3. Is being able to navigate a Windows operating system a critical skill for new nurses entering the field?
4. Is being able to search the Internet for information a critical skill for new nurses entering the field?
5. Is being able to use email a critical skill for new nurses entering the field?
6. Is being able to use calendar software a critical skill for new nurses entering the field?
7. What other information technology skills are critical skills for new nurses entering the field?

### Methodology

Using information from IT and nursing sources, the authors developed a questionnaire that was pilot tested by nursing administrators in the local area. After incorporating the suggested changes, the survey instrument and cover letter were mailed nationwide to 2000 randomly-selected members of the American Organization of Nurse Executives. These members were selected as the population because they are the ones who are most likely to hire new nurses and would understand what IT skills these nurses should have upon entering the workforce.

To answer each question, the respondents were asked to choose from 1 to 5 on a Likert scale. Choosing “one” was a skill ‘not needed at all’ to “five” which was a skill that was “critical.” They also answered three demographic questions. Eighteen questionnaires were returned as non-deliverable. Seven hundred and fifty-two usable questionnaires were returned for a response rate of 38%.

### Findings

Thirty-five percent of the respondents had one to five years of experience. Twenty-three percent had six to ten years of experience. Forty-four percent of the respondents worked in an urban medical setting. Twenty-nine percent of the respondents worked in a suburban medical setting. Twenty-four percent of the respondents worked in a rural medical setting. Eighty percent of the respondents worked in a medical facility that employed more than one hundred nurses.

What types of software skills are critical skills for new nurses entering the field?

Nurse executives indicated that having the skill to search databases for medical information such as lab reports was an important skill for new nurses. The respondents also indicated that having the skill to create simple databases for information and being able to use word processing to create simple documents such as memos, letters, and reports were somewhat important skills. The nurse executives indicated that advanced word processing, spreadsheet skills, and presentation skills were skills that were not needed by new nurses. See Table 1.

Table 1: What types of software skills are critical skills for new nurses entering the field?

<b>Skill</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Variance</b>
Basic Word Processing	3.5	1.2	1.3
Adv. Word Processing	2.4	1.1	1.2
Basic Spreadsheets	2.7	1.2	1.4
Adv. Spreadsheets	2.2	1.2	1.3
Basic Presentations	2.9	1.2	1.5
Adv. Presentations	2.1	1.1	1.2
Create Databases	3.2	1.3	1.7
Search Databases	4.4	0.9	0.8

Is knowledge of nursing-specific software critical for new nurses entering the field?

As expected, the respondents reported that being able to effectively and efficiently use nursing-specific software including bedside charting and interfacing with computer-activated medicine dispensers is an important skill for new nurses. See Table 2.

Table 2: Is knowledge of nursing-specific software critical for new nurses entering the field?

<b>Skill</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Variance</b>
Nursing-specific software	4.7	0.6	0.4

Is being able to navigate a Windows operating system a critical skill for new nurses entering the field?

Two questions addressed the issue of using a Windows operating system. One question focused on knowing Windows operations such as maximizing and minimizing screens. Another questions focused on using the file management properties to organize information. The respondents noted that while both of these topics were important skills, being able to use the basic Windows operations was most important. See Table 3.

Table 3: Is being able to navigate a Windows operating system a critical skill for new nurses entering the field?

<b>Skill</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Variance</b>
Basic Windows Operations	4.4	1.0	1.0
Windows File Management Properties	3.8	1.2	1.4

Is being able to search the Internet for information a critical skill for new nurses entering the field?

This question did not attempt to address whether nurses would be looking for specific nursing information or information in general but simply asked if being able to conduct an Internet search is important. The nurse executives responded that this skill is important for new nurses in the field. See Table 4.

Table 4: Is being able to search the Internet for information a critical skill for new nurses entering the field?

Skill	Mean	Standard Deviation	Variance
Search the Internet for Information	4.4	0.8	0.7

Is being able to use email a critical skill for new nurses entering the field?

Face-to-face interpersonal communication skills are emphasized in the nursing curriculum. Though use of email is common in business, the researchers were interested in discovering if this form of communication was important for new nurses. The respondents indicated that being able to use email effectively was an important skill. See Table 5.

Table 5: Is being able to use email a critical skill for new nurses entering the field?

Skill	Mean	Standard Deviation	Variance
Use email effectively	4.1	1.1	1.1

Is being able to use calendar software a critical skill for new nurses entering the field?

Another skill that is emphasized in the nursing curriculum is organization. With the use of personal digital assistants and computerized calendar software gaining importance in the business world, the researchers wanted to know if using this type of software is important for new nurses. The nurse executives reported that using calendar software to stay organized was a somewhat important skill needed by new nurses. See Table 6.

Table 6: Is being able to use calendar software a critical skill for new nurses entering the field?

Skill	Mean	Standard Deviation	Variance
Use calendar software	3.2	1.3	1.6

What other information technology skills are critical skills for new nurses entering the field?

The respondents were asked to list any other technology skill that they believed was critical for new nurses to possess when entering the job market. Thirteen percent of the respondents indicated that new nurses needed basic keyboarding skills. Eleven percent answered that new nurses needed to understand and use computerized patient records. Eight percent responded that new nurses needed computerized order entry skills. Seven percent answered that new nurses needed basic software and hardware troubleshooting skills.

### Conclusions and Recommendations

While business students appear to be arriving with basic computer experience in the workplace, nursing students appear to be technically unprepared in today's informatic healthcare market. Nursing students need both traditional computer courses as well as specialized nursing computer courses in their curriculum. One can conclude that there are opportunities for IT professors to collaborate with nursing faculty to help these nursing students gain the necessary computer skills for successful employment.

To be most effective for new nurses, the course should include basic operating systems functions and file management, basic word processing functions, database creation and queries, information retrieval using Internet, email, calendar software, and then advance into the specialized nursing software which should include bedside charting, order entry, patient records, and computerized medicine dispensing.

During the clinical experiences at the hospitals, the student nurses could undertake projects that would help them reinforce the technology skills that they learn in the course. This course could be team-taught by both IT faculty and nursing faculty, or part of the subject matter could be presented as an on-line course by the IT faculty.

Recommendations for Future Research:

1. Survey nurses who have entered the field in the past year to discover what computer skills they consider to be critical and compare them with current results.
2. Follow-up both surveys in five years to discover what computer skills will be considered critical at that time.

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