



Center *for*
Rural Health

University of North Dakota
School of Medicine & Health Sciences

North Dakota Nursing Programs
Use of Technology:
A Statewide Assessment

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August 2005

Funding for this project was provided
by the North Dakota Board of Nursing.

*Connecting resources and knowledge to strengthen
the health of people in rural communities.*

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Executive Summary

North Dakota, a primarily rural state, will see one-third of its active nursing workforce retire within the next nine years (Three-Year Comparison of North Dakota Nurses: Results and Implications King & Moulton, 2005). One approach to increasing the number of qualified graduates is the application and coordination of technological programs that maximize the limited faculty, clinical placements, and financial resources available in the North Dakota nursing programs.

The North Dakota Board of Nursing directed the Center for Rural Health at the University of North Dakota to conduct a statewide assessment of technology use across the nursing programs in the state as part of the North Dakota Nursing Needs Study. Eight programs were interviewed by phone.

All eight programs offer traditional face-to-face courses; five programs offer distance education through internet courses; six programs offer some distance education via video-conferencing; one program has used video streaming for a single semester while another program will be implementing video streaming in 2006; and seven programs use simulations in clinical education.

All programs cited a lack of funding and time to train faculty as barriers to more use of technology, although one program indicated a primary barrier of a high amount of institutional resistance to adapting technology in the training of nurses. Gaps between those programs that are “technologically advanced” and those that are not exist. Recommendations for new utilization of technology in nursing education as a way to expand student capacity include:

- ◆ Increased funding for faculty training in new technologies.
- ◆ Increased funding for the training of students in new technologies.
- ◆ Increased training for returning and underrepresented populations so that they can access nursing education technologies at the same rate as other students.
- ◆ Focused expansion of high speed internet into rural areas of the state that do not currently have such technology.
- ◆ Create partnerships with medical facilities and other programs on campus in order to utilize the technology that these other programs currently have access.
- ◆ Train current students to act as peer advisors in the use of various technologies in order to reduce the number of hours faculty are called upon to train new students.
- ◆ Create policy that rewards innovations in technology use in order to drive faculty development.

Introduction

Health personnel shortages can negatively impact health care quality, through reduced health care access, increased stress on providers, and the use of under-qualified personnel. Also, shortages can contribute to higher costs by raising compensation levels to attract and retain personnel and by increasing the use of overtime pay and expensive temporary personnel. Workforce shortages, while a problem for the entire health care system, are likely to be most severe for rural/frontier regions and medically needy population groups such as the elderly. North Dakota has 41 designated medically underserved areas (MUA) and 81 percent of ND counties are designated as partial or whole county health professional shortage areas (HPSA). North Dakota also has the highest proportion of residents age 85 and older, the age group with the greatest need for healthcare services. In North Dakota, this population is predicted to double by 2020.

Nurses are an integral part of the health care system providing nursing services to patients requiring assistance in recovering or maintaining their physical or mental health (North Dakota Healthcare Association, 2002). In the United States, nurses comprise the largest group of health care providers. They practice in settings ranging from public health to long-term care. The ability to provide accessible, high quality care depends on the availability of a nursing workforce with the requisite skills and knowledge. Over the past few years, research studies have identified clear relationships between nurse staffing and patient outcomes. For example, lower nurse staffing in hospitals has been linked to longer hospital stays for patients, as well as a number of complications such as pneumonia. Directly challenging the health care system's ability to provide quality patient care is a growing national and international disparity in nursing workforce supply and demand. North Dakota is not immune to this trend.

The Nursing Needs study was recommended, in 2001, by the North Dakota State Legislature (NDCC Nurse Practices Act 43-12.1-08.2) to address potential shortages in nursing supply. Specifically, the North Dakota Board of Nursing was directed to address issues of supply and demand for nurses, including issues of recruitment, retention and utilization of nurses. To respond to this request, in 2002, the North Dakota Board of Nursing contracted with the Center for Rural Health at the School of Medicine and Health Sciences, University of North Dakota.

This technology assessment, initiated in 2005, is designed to collect and analyze data in order to obtain an accurate and complete picture of the use of technology in nursing education in North Dakota.



Assessment Procedure

Following an extensive review of a technology assessment conducted in the State of Oregon, Technology in Nursing Education Oregon Education Based Technology Needs Assessment: Expanding Nursing Education Capacity (Krautscheid & Burton, 2003) as well as all other relevant literature, the tools utilized by the Oregon investigation were selected for the current assessment. The instruments were altered from their earlier forms in order to account for new technologies on the market. In addition, assessment instruments were altered based on consultation with an education and technology specialist as well as local nursing education program technology staff. Copies of these tools can be found in the Appendices.

An interviewer contacted the chair of each nursing program in North Dakota. A copy of the consent form, as well as a copy of each assessment tool were e-mailed to the chairs, who were also informed that an interviewer would contact them by phone at a later date. They were asked to have another faculty member present for the interview if there were questions on the tools they could not answer. Also, they were asked to either talk to a technical support person about any, questions they could not answer, or to provide the interviewer with a phone number for their programs technical support.

The interview was conducted via phone. In all cases, the chair of the program was present for the interview. For two programs, a separate faculty member was also present during the interview. It was not necessary to contact a technical support person for any of the programs as the faculty members were able to answer all questions in a sufficient manner.

Assessment outcomes were measured in terms of the eight programs that were interviewed as part of the study: Dickinson State University (Dickinson, ND), University of North Dakota (Grand Forks, ND), University of Mary (Bismarck, ND), North Dakota State College of Science (Wahpeton, ND), United Tribes Technical College (Bismarck, ND), Tri-College University Nursing Consortium (Fargo, ND and Moorhead, MN), Minot State University (Minot, ND), and Med Center One College of Nursing (Bismarck, ND).

Results

Distance Learning: Synchronous

Synchronous distance learning through video-conferencing (e.g. Interactive Video Network: IVN) is available in most of North Dakota. Seventy-five percent of the programs currently employ regular video-conferencing as part of their nursing education. Video-conferencing programs allow for a live presentation to be sent into, or out of a classroom, thus permitting individuals who are not currently at the site of the live presentation to take part in the learning experience (two-way audio and video). A number

of participants reported that video-conferencing capabilities have allowed them to interact in a live capacity with students that would otherwise be prevented from taking part in their programs.

Of the two programs that do not currently use video-conferencing, one of them indicated that they would be installing the technology during the 2005-2006 school year. The other indicated that it feels nursing education should be conducted in a hands-on manner and thus they have no plans to add distance education technologies to their curriculum.

Those programs that utilized video-conferencing indicated that the technology has been extremely successful, but that there were some limitations. First, instruction required the use of specific rooms where the technology was available, which on many campuses is only a few specific rooms that are shared by all departments. This limited the number of classes that could be offered and the number of students that were able to be served by the technology. Second, the students are required to be “on-site” where the technology is available, thereby necessitating that the students live within an easy driving distance of a facility that offers a video-conferencing link. Finally, there have been some issues with connectivity due to the rural settings of some of the active video-conferencing sites. A few programs mentioned that some areas of North Dakota “simply don’t have the wiring that is needed to make a good connection and the feeds drop while you are teaching.” It was suggested that funding be established that would allow for the installation of the needed technology in all areas of the state.

Only two programs (twenty-five percent) indicated a desire to utilize video-streaming. One program used it for the first time on a trial basis during the spring 2005 semester while another will begin to employ it in late 2006. Most programs indicated that video-conferencing was an easier and cheaper technology to use and that video-streaming required higher speeds of Internet connectivity that many rural areas cannot currently support. Unlike video-conferencing, video streaming uses live Internet connections, a technology that has penetrated less of the state. Additionally, unlike video-conferencing, video-streaming’s delivery of content is limited by the capacity and bandwidth of the host computer system. Each computer that taps into that stream siphons off a certain amount of the bandwidth, ultimately slowing the communication with any other computer that is attempting to tap into that same live video-stream. This ultimately places a limit on video-streaming that video-conferencing does not have. In general, there was very little interest in investigating video-streaming as a tool for nursing education. It was viewed as a technology that could serve “fewer students at one time” and would be more apt to “crash or drop connections” than the current video-conferencing technology.

It should be noted that one program chair did mention that should the state expand its wireless Internet into rural areas, video-streaming might be a technology of interest for live clinical “in-home” experiences. In this theoretical use of video-streaming technology, wireless laptops would be provided to students who made house-calls for rural patients. These house-calls would be filmed and streamed live into a classroom. However, this idea will not be possible until wireless Internet is available throughout larger areas of the state than currently.

Distance Learning: Asynchronous

Asynchronous distance education via a partially web-based course and/or fully online courses is widely available in North Dakota. Two programs offered continuing education RN degrees that could be gained solely through online courses, while sixty-three percent of the programs offered at least some of their curriculum via online courses; i.e. some portion of the nursing degree requirements could be fulfilled without visiting the campus itself. One program dropped its distance web program due to negative student feedback, the students reporting that they did not learn as much when they were not taught face-to-face.

Online education was also the area in which most programs indicated a future desire to expand the technologies they use. Seventy-five percent of the programs indicated that their program's strategic plans included the "expansion of the number of courses available online" or the "increased use of web-enhanced" classes.

The programs that currently utilize web-enhanced and online courses indicated a high level of satisfaction and success from these courses. Two of the programs also indicated that there have been no differences in Grade Point Averages (GPAs) for the students who take the online courses versus those that are taking the same course in the traditional face-to-face manner.

Programs indicated a number of barriers to expanding the use of this technology. First, there is a steep learning curve for faculty. Many programs indicated that their programs do not currently have funding for faculty to educate themselves on how to deliver web-based content, and that the learning curve can be considerably high depending upon the faculty members' level of technological savvy. The Oregon report indicated that many Oregon programs overcame this problem by offering release time for faculty who want to gain the skills to provide online courses. Second, a number of programs indicated that there is a difference between the content that can be delivered online and the content that is delivered face-to-face, and that these differences can lead to disparities in what the students are learning. Indeed, it was because of a perceived lack of "real knowledge" being delivered online which prompted one program to drop their online courses. The students in that case reported that they had better courses from face-to-face teaching. Third, many programs indicated that faculty spend too much time as "technical support" when online course or web-enhanced technology was not working. It was suggested that the budgets for technical support be increased and that specific individuals be hired to deal with the technical support of students' home systems. Another suggestion was that students be trained as peer-advisors and placed in work study positions to absorb some of the pressure that is being placed on faculty. Fourth, many programs mentioned that some students were not technologically competent for online course material and that there should be a screening method or training session for students who are not advanced enough to use online content. Finally, a number of programs stated that there are barriers associated with trying to deliver an online course to rural and/or low-income students. Some areas of North Dakota do not have high-speed internet capabilities. Additionally, some of the online courses require specific computer programs to function, which can

involve purchases that low-income students are not capable of making. In both cases, delivery of content is limited for particular populations, thereby limiting the effectiveness of the online or web-enhanced courses.

Clinical Training Technologies

Eighty-eight percent of programs utilize human-patient simulators (ranging from high fidelity simulations like SimMan and SimBaby to less expensive Cath and Resuscitation simulators) to provide some of their clinical training experiences. One program stated that they are not enthusiastic about technology in teaching clinical techniques, but that they are considering a limited use of simulations to augment the face-to-face clinical training. Many of the programs indicated that the simulations were used during the early years of nursing training in order to extend the clinical experiences of the students, not to replace the live face-to-face experiences that internships and placements provide. The general consensus was that simulators cannot take the place of live human interactions and training in a clinical setting.

All of the programs that have used simulators reported that the technology was very successful and that the students were pleased with their experiences. However, they indicated that the high expense of such technology prevented the increased implementation that would be required to educate more students and address the state's nursing shortage. Additionally, programs indicated that the nature of the technology limits the number of students who can use it at any one time, thus requiring the purchase of more units should there be an increase in the number of students in each program. The need to purchase more units, and in the case of high fidelity simulations, to build rooms in which these simulators are housed, has severely limited the ability of some programs to add these technologies, even though they have a desire to do so. Some programs suggested that North Dakota look into providing grant funding for rural nursing education colleges and universities in order to supplement the limited number of clinical training placements that are present in those rural communities.

In summary, seventy-five percent of programs use video-conferencing for an average of two classes per semester, serving a range of 20 to 150 students (see Table 1). Only twenty-five percent of programs use video streaming on a trial basis. Fifty-seven percent of programs use web based courses for an average of 3 classes per semester serving a range of 15 to 35 students. Eighty-one percent use simulation in an average of two classes per semester serving a range of 5 to 20 students.

Table 1: Technology Use and Faculty Training by Technology

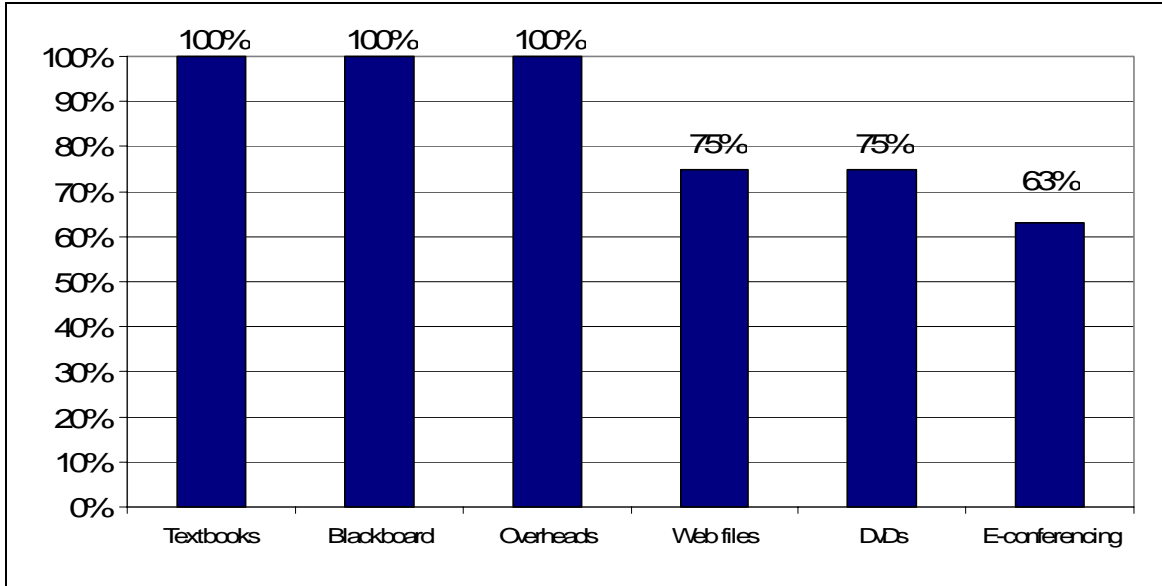
Technology	Number of Programs that Utilize	How Often is the system Used	How many Students can use
Video Conferencing	75%	Average of 2 classes per semester	Range: 20 to 150
Video Streaming	25% will have begun use by 2006	Trial use only	N/A
Web Based Asynchronous Programs	57%	Average of 3 classes per semester	Range 15-35
Simulations	81%	Average of 2 courses per semester	Range: 5 to 20

Level of Technology Utilization

Programs were also rated on a continuum of their level of technology implementation from low technology use (i.e., textbooks, papers, meeting, office hours) to high levels of technology use (i.e., multimedia presentations, video conferencing, intensive clinicals) (see Technology Continuum Assessment tool in appendix). North Dakota nursing education programs utilize high levels of technology in the area of Nursing Practice, while the low end of technology use is in the areas of Student Delivered Content and Individual Interaction.

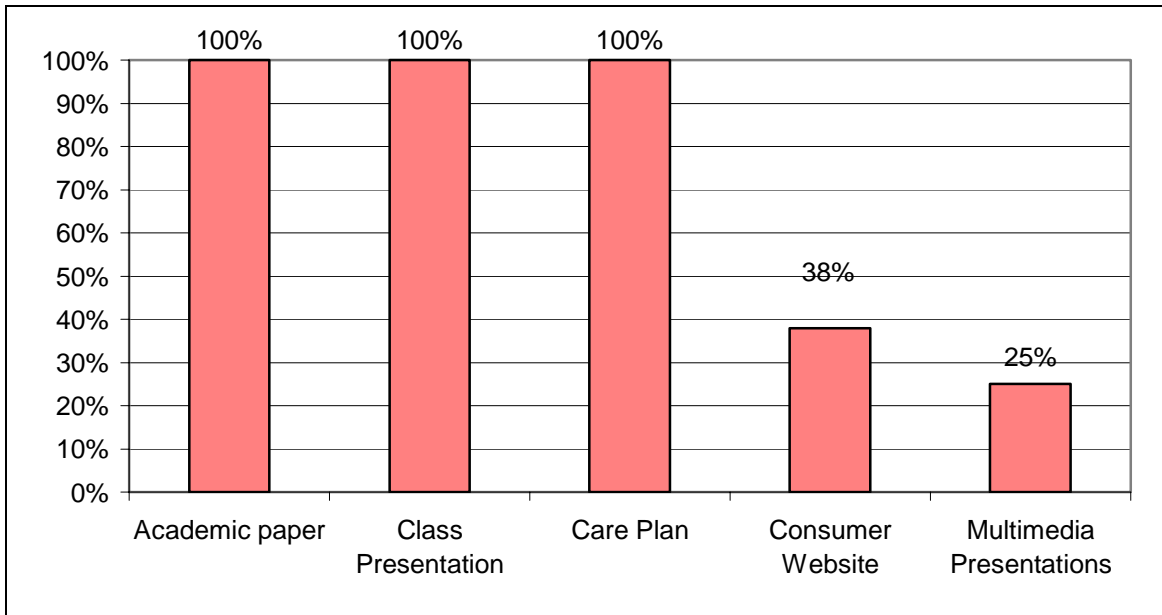
For presentations, one hundred percent use textbooks, blackboards, and overheads, while only sixty-three percent utilize e-conferencing (see figure 1).

Figure 1: Presentation, Media, and Hypermedia by Level of Utilization



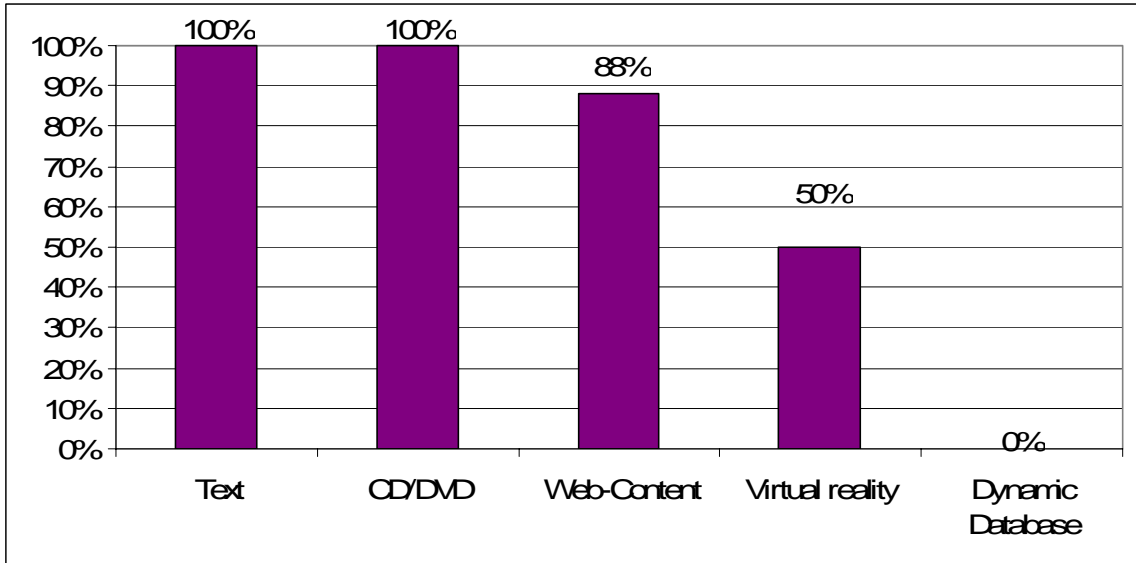
For student delivered content, one hundred percent utilize academic paper, class presentations, and care plan development, while only twenty-five percent use multimedia presentations (i.e., powerpoint) (see figure 2).

Figure 2: Student Delivered Content by Level of Utilization



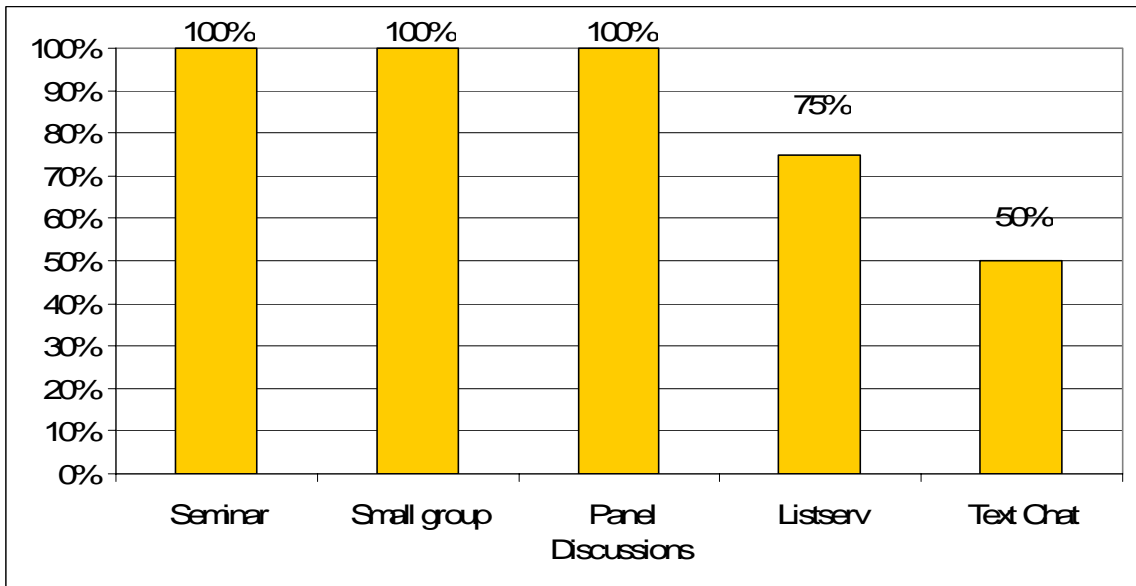
For individual interaction, one hundred percent utilize text and CD/DVD interactions, while zero percent use dynamic database driven web sites (interactive web experiences) (see figure 3).

Figure 3: Individual Interactions by Level of Utilization



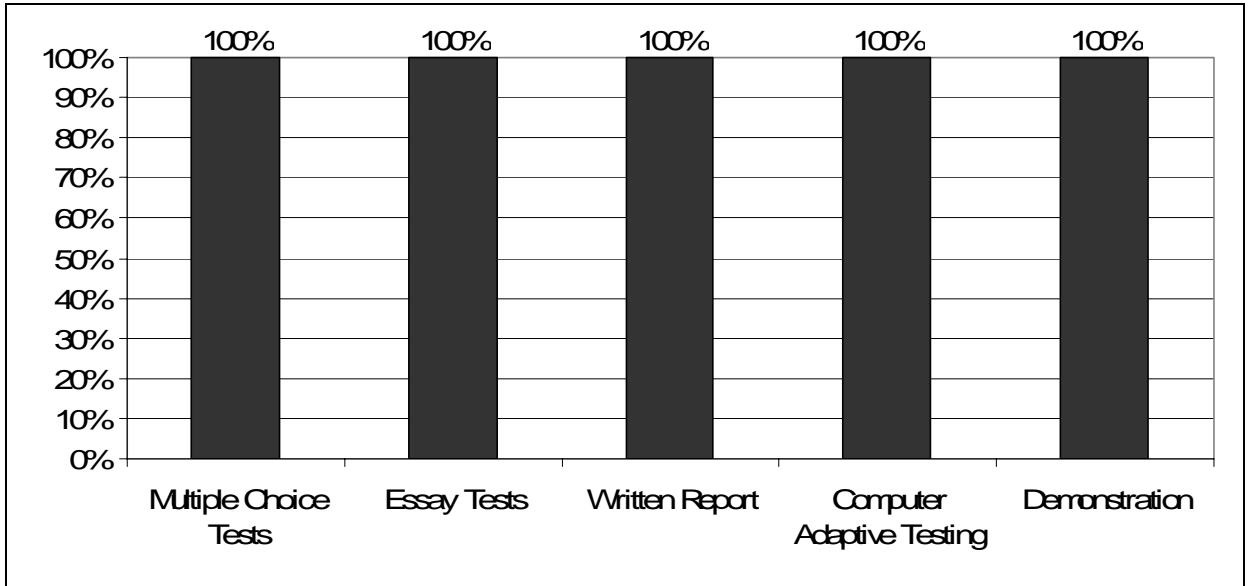
For discussion, one hundred percent utilize seminar, small group and panel discussions, while fifty percent use online text chat (live, web-based discussion) (see figure 4).

Figure 4: Discussion by Level of Utilization



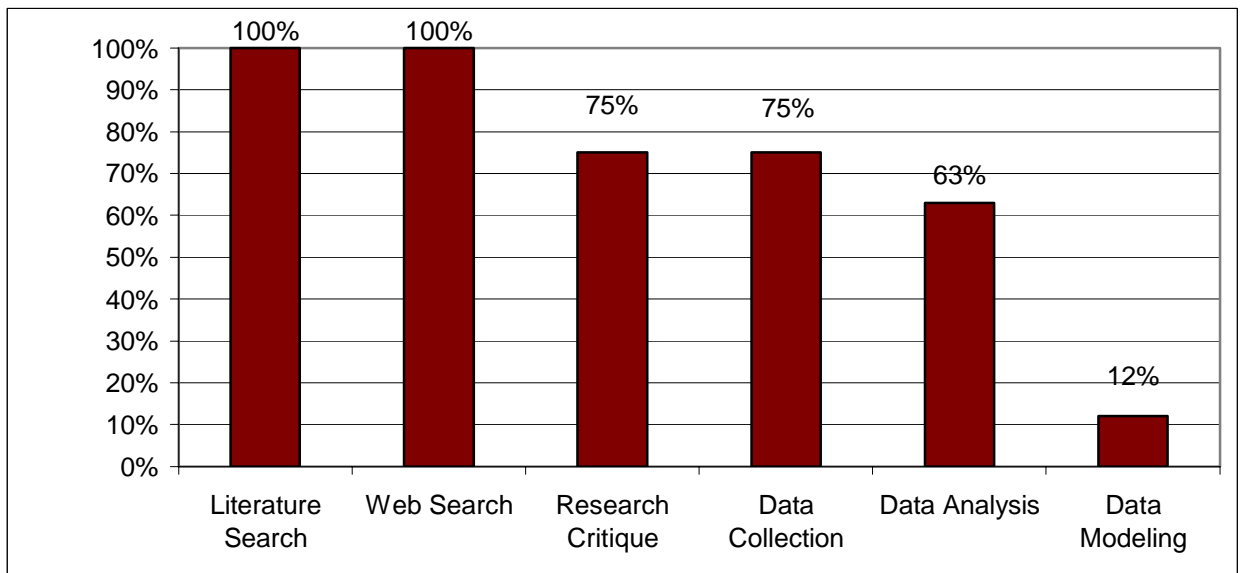
For performance evaluation, one hundred percent use multiple-choice tests, essay tests, written reports, computer adaptive testing (individualized computer-based tests), and demonstrations (see Figure 5).

Figure 5: Discussion by Level of Utilization



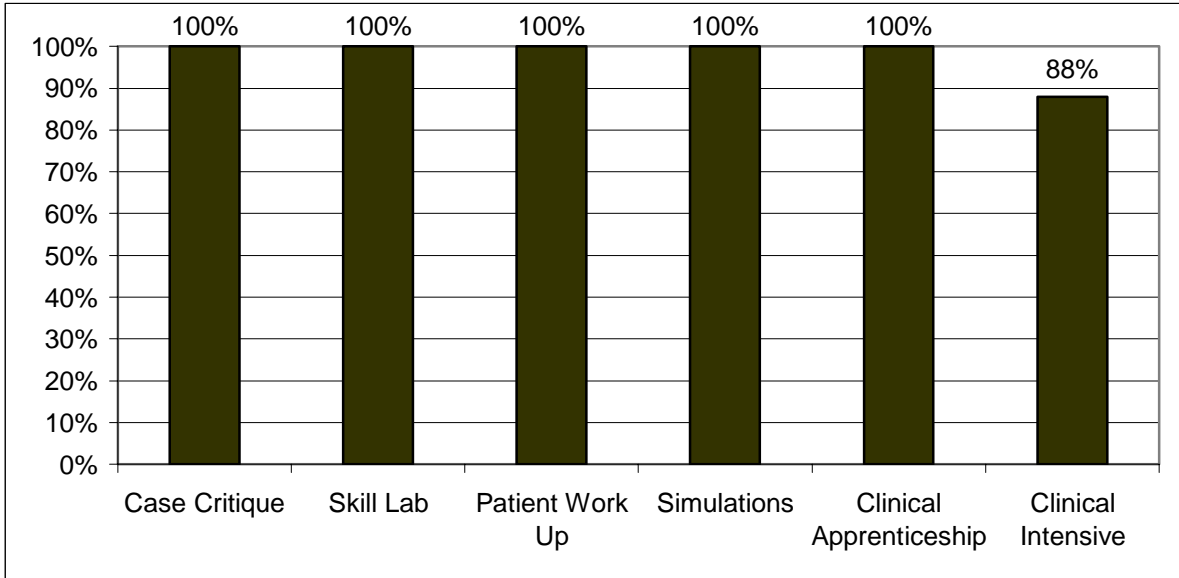
For investigation and research activities, one hundred percent utilize literature searches and web searches, while only twelve percent use data modeling (advanced statistical software) (see Figure 6).

Figure 6: Investigation/Research by Level of Utilization



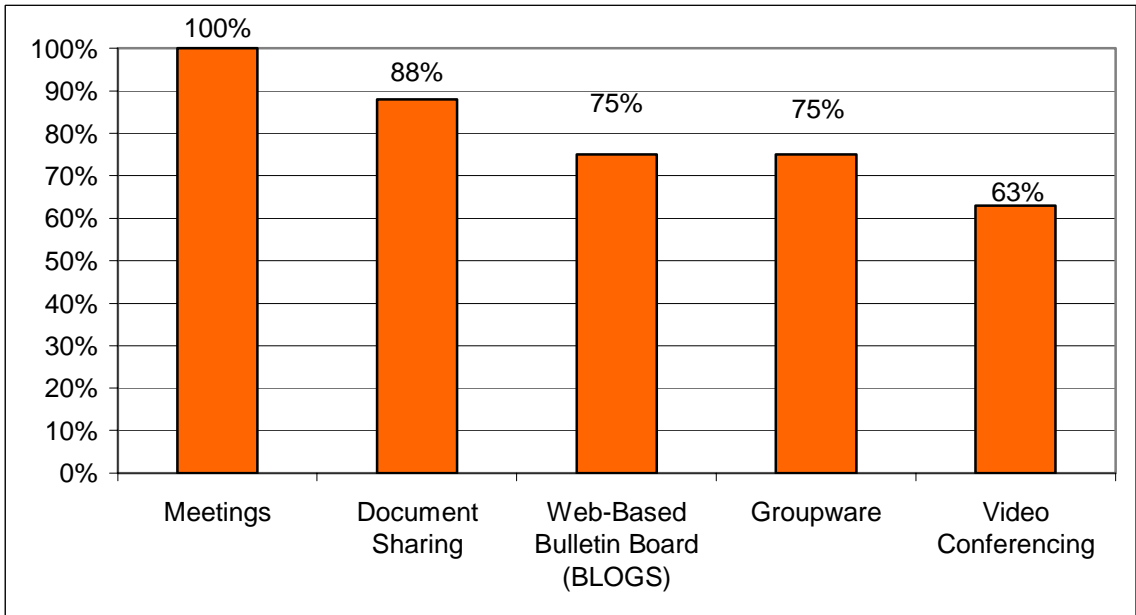
For practice-related activities, one hundred percent utilize case critiques, skill labs, patient work-ups, simulations, and clinical apprenticeships, while eighty-eight percent use clinical intensives (see Figure 7).

Figure 7: Practice by Level of Utilization



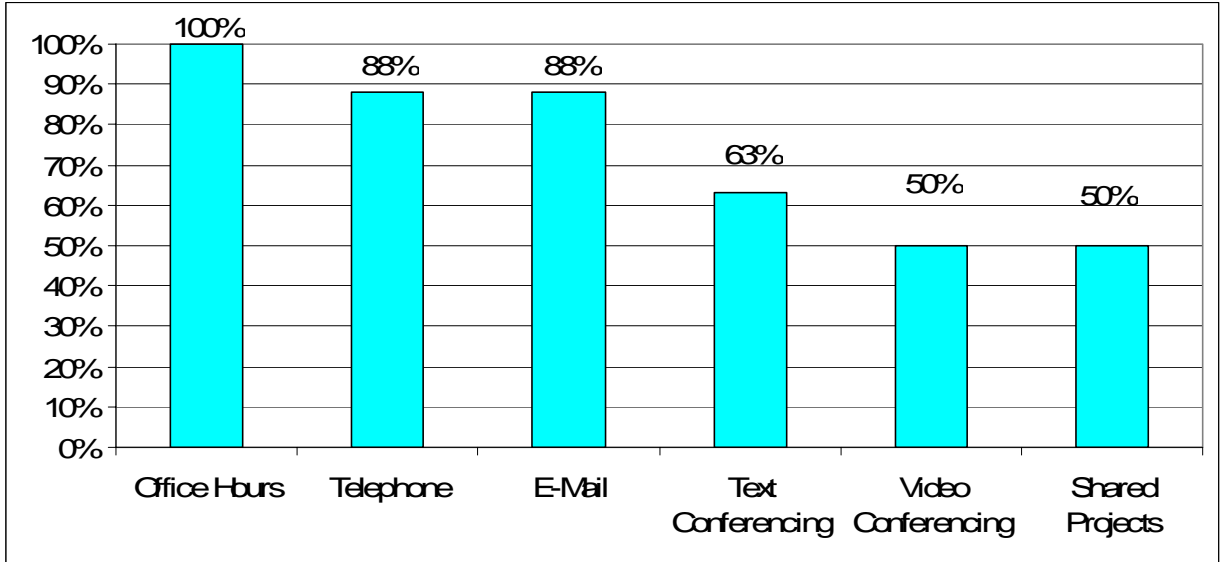
For collaborative activities, one hundred percent utilize meetings, while sixty-three percent utilize video-conferencing (see Figure 8).

Figure 8: Collaborations by Level of Utilization



For mentoring activities, one hundred percent utilize office hours, while fifty percent use video-conferencing and shared projects (see Figure 9).

Figure 9: Mentoring by Level of Utilization



Faculty Readiness

Faculty readiness to utilize technology was measured by examining what percent of faculty were trained on distance learning technologies. Less than 30% was considered low, 31% to 60% was moderate, and above 60% was considered high. Three of the programs were rated as low, three moderate, and two programs were rated as high in faculty readiness. Comments indicated that because of the expense and time required to train faculty on the distance education technologies, they tend to train only a few individuals and have those individuals set up the classes that will be delivered via distance education. A major barrier to the increased use of technology is the difficulty in finding time and money to train all of the faculty.

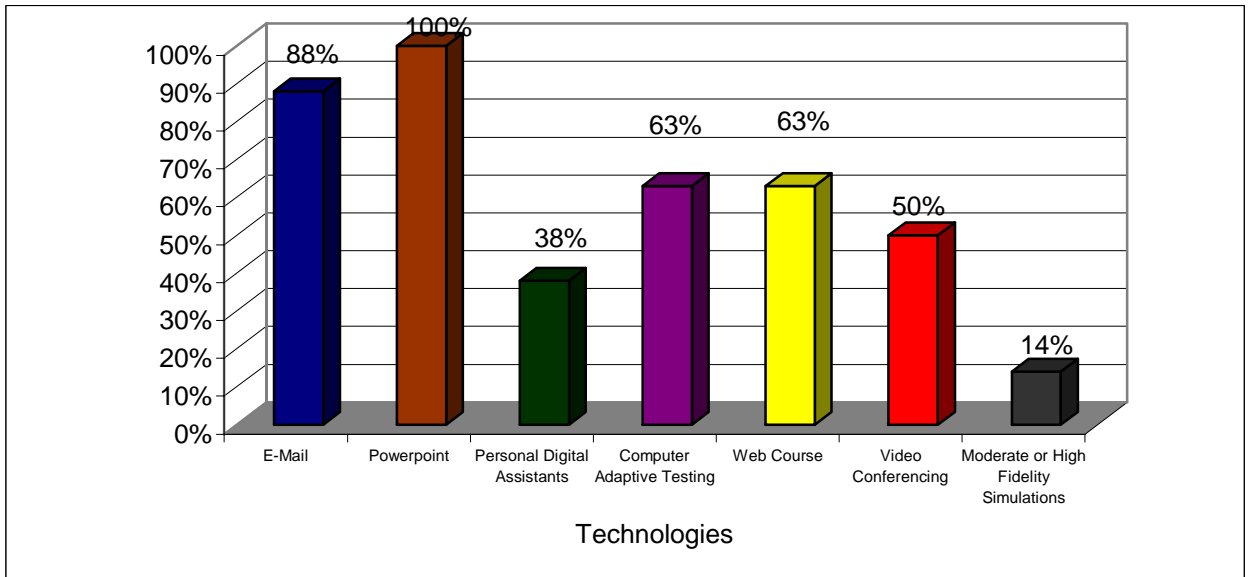
Additionally, programs were asked if they had a faculty expert in informatics. Only 14% of programs had an expert and none of the programs who lacked an expert were currently considering hiring one. Instead, their faculty members are expected to become experts enough to carry out their current responsibilities as they apply to technology.

Student Readiness

Student readiness was measured by assessing how many out of seven standard technologies that the students use on a regular basis. Three or less was considered to be low, four or five was considered moderate, and six or higher was considered high. Of the eight programs, two were considered to be low in student readiness, three were moderate, and three were high.

Eighty-eight percent of students use e-mail, while one-hundred percent use Powerpoint (see Figure 10). However, only thirty-eight percent utilize Personal data assistants (PDAs), and only fourteen percent regularly use moderate or high-fidelity simulations. These findings support the assertion that many North Dakota nursing education programs could increase their training for students in order to better use the technologies that are available.

Figure 10: Percentage of Programs in which Students Use Specific Technologies



Implications

Nursing programs in North Dakota have demonstrated that technology can be effectively employed in nursing education. Through distance education and clinical simulations, some of the programs have increased the number of students they serve and the area of the state that they serve. Most programs interviewed indicated a specific desire to utilize technologies that will improve their programs and increase the number of students they can train.

Programs indicated that lack of funding and lack of time to train faculty were the major barriers to meeting their goals of increasing the use of technology in nursing education. Other barriers identified were student readiness, lack of resources for specific special populations, and the rurality of the state (lack of high speed internet and cable television).

An essential step to increasing the use of technology in North Dakota nursing education will be to identify which technologies were most effective for the limited funding that is available. This may be best accomplished on a program-by-program basis, building on the existing technologies at those institutions and combining resources with other programs in those institutions. Additionally, time efficient methods for training faculty and students on the use of the technologies should be investigated.

Seventy-one percent of the programs reported that the largest hurdle in nursing education and technology is learning to balance the reliance on technology and the face-to-face clinical experience that is required. Many respondents suggested that technology cannot replace the face-to-face training that is already delivered, but that it could augment it if implemented in the correct manner. This suggests that an investigation of how to best employ technology in a clinical setting should be pursued.

In response to the question “what do you see as the preferred vision for increasing technology-based clinical education across North Dakota’s nursing education community” the following themes emerged:

1. Use technology to increase clinical experience, not replace face-to face experiences.
2. Utilize technology for clinical competency testing, not practice.
3. Examine technology that links clinical sites to schools in order to expose students to live procedures.
4. Investigate ways to train people in rural areas by employing video-conferencing/streaming in the clinical setting.

Discussion

This technology assessment highlighted a number of policy changes in nursing education in North Dakota. First, when examining responses program by program, it became clear that there is a large gap between those programs that have high technology and those that have low technology. Indeed there are specific programs that lack almost all technology beyond basic computers due to their rurality and their lack of funding. This specific finding leads us to recommend a policy of increased funding for these smaller programs as they serve areas of the state that other programs do not.

Second, the state could adapt a policy of equivalent connectivity technology across the state. Currently, according to some of the interviewed programs, there are areas of the state that lack high-speed Internet access. The individuals who live in these areas are not capable of taking advantage of the distance education opportunities that are offered. The program representative spoke of having to turn students away who desired nursing training not because they lacked the skills to be nurses, but because they lived in rural areas where they could not gain access to the needed technology.

Third, eighty-eight percent of programs indicated that they did not have a current partnership with any health care facility. Technology exists that allows for easy document sharing and clinical experiences between training programs and medical facilities. However, the programs in North Dakota are not taking advantage of these programs and are thus missing out on opportunities that other states, such as Oregon and Washington, utilize to augment their students experiences. Program or state policies that foster these types of relationships should be pursued.

Finally, eighty-eight percent of the programs have a strategic plan that includes increased use of technology. However, most of these programs indicated that this increased use of technology was leading to an increased burden on their faculty members due to the lack of funding or resources to train these faculty members or students on how to use the new technology. Program or state policy should be adapted that rewards programs and faculty members that train on new technologies. A number of the individuals interviewed offered very innovative ideas on how to use technology, yet they do not have the time to follow these ideas to their fruition. By not adapting policies that push innovation and inventiveness North Dakota's nursing programs are losing opportunities to add models that will serve larger populations of students.

In summary, this report indicates that a number of North Dakota's nursing education programs are utilizing technology in their education process. Many of the programs express a desire to increase this use of technology. If they are able to, these programs report that they will be able to serve a larger population of students and thus increase the number of trained nurses entering the job market in North Dakota. Given that North Dakota will lose one-third of all of its current nurses within the next nine years, it is the suggestion of these authors that various policies be implemented that will allow for this increase in technology use.

Appendices

Instructional Technology Questionnaire

Nursing Program _____

Chair/Dean _____ Faculty Member _____

Technical Support _____

Phone _____

Phone _____

Phone _____

	Installation Date (Year)	What equipment has been installed? Include peripheral equipment	Connectivity	System Support	How often is it used?	How many students can use at one time?	How many faculty know how to use?	System Success	System Problem
Synchronous Please circle			Please circle	Please circle					
<ul style="list-style-type: none"> ▪ Videoconferencing <ul style="list-style-type: none"> - Polycom - Dedicated Band-width polycom - IVN - Web-based Teleconference Other- list 			<ul style="list-style-type: none"> • ISDN: band width • IP • I Net • Bridges • T1 • T3 • Fiber 	<ul style="list-style-type: none"> • IT support • Software updates • System maintenance • Instructional Design Support 					
<ul style="list-style-type: none"> ▪ Video-Streaming <ul style="list-style-type: none"> - Real Presenter - Real Networks - Apple Quick Time - Windows Media Other-list 			<ul style="list-style-type: none"> ▪ ISDN: band width ▪ IP ▪ I Net ▪ Bridges 	<ul style="list-style-type: none"> • IT support • Software updates • System maintenance • Instructional Design Support 					

	Installation Date	What equipment has been installed? Include peripheral equipment	Connectivity	System Support	How often is it used?	How many students can use at one time?	How many faculty know how to use?	System Success	System Problem	
Asynchronous Please circle			Please circle	Please circle						
<ul style="list-style-type: none"> ▪ HTML Sites ▪ Web Based Products ▪ University Designed Templates ▪ Web Course Products <ul style="list-style-type: none"> - Web CT - Blackboard - eCollege Other- list			<ul style="list-style-type: none"> • ISP • WAP (wireless apps) 	<ul style="list-style-type: none"> • IT support • Software updates • System maintenance • Instructional Design Support 						

	Installation Date	What equipment has been installed? Include peripheral equipment	Connectivity	System Support	How often is it used?	How many students can use at one time?	How many faculty know how to use?	System Success	System Problem
Simulations Please circle			Please circle	Please circle					
<ul style="list-style-type: none"> • Patient Simulation <ul style="list-style-type: none"> - SimMan - HPS (Meti) - Cath simulator - Computerized Resuscitation Simulators • Other- list 				<ul style="list-style-type: none"> • IT support • Software updates • System maintenance • Instructional Design Support 					

In order to compare education program data with healthcare facility data, please indicate what types of technology you have available in your department.

- _____ Interactive Video Network (IVN)/ Video Conferencing
- _____ Polycom Audio Network
- _____ On-Line Telemedicine
- _____ Digital Records (Imaging)
- _____ High speed internet (e.g., DSL, Broadband)
- _____ Webcast

Please circle roughly, where you believe your nursing program lies in the continuum in each row ranging from least complex on the left to the most complex on the right.

Technologies in Nursing Education Continuum

Learning Activity	Technologies						
Presentations Media and Hypermedia	Lecture Textbooks	Blackboard Whiteboard Flipcharts	Overheads Slides Computer Slides Handouts	Accessing Web-based Text, Graphics, and file downloads Using Videotapes CDs DVDs	Producing Videotapes CDs DVDs Closed Circuit TV One-Way Video Transmission Streaming Audio/Video	Conceptual Mapping Designing Interaction Developing Dynamic Web-based or CD Content Synchronized E- Conferencing	
Student Delivered Content	Academic Paper	Class Presentation Overheads, slides, computer slides Posters	Teaching Plan Care Plan Patient Work-up	Consumer Health Web Site Development	Multimedia Productions		
Individual Interaction	Programmed Texts		CAI Interactive CD/DVD	Accessing Static Web- based Content	CD Gaming Interactive Multimedia Virtual Reality	Dynamic Database Driven Web Site	
Discussion	Seminar	Small Group	Panel Discussion	Email Listserv Newsgroup	Text Conferencing Chat		
Performance Evaluation	Testing (Multiple Choice, True or False, Fill- in)	Essay Test	Personal Journal Written Report Term Paper	Computer Adaptive Test (CAT)	Demonstration / Observation		
Investigating / Research	Literature Searching	Web Searching Accessing On- line Journals	Research Critique Web Site Evaluation	Data Collection Accessing Clinical Data & Public Health Data Sets via the Web	Data Set Manipulation Statistical Analysis Qualitative Analysis	Research Design	Data Visualization Modeling Prototyping
Practice	Case Critique Role Playing	Skills Lab	Patient Work-up Community Assessment		Simulation Virtual Reality MUD / MOO	Clinical Apprenticing	Clinical Intensive
Collaborations	Meetings Email Telephone	Document Sharing	Text Conferencing; BLOGs	Groupware / Teamware (Electronic whiteboard, application sharing, shared task list, shared calendar, text conferencing, voting and decision making) Shared Bibliographic database	Video Conferencing Web Conferencing		
Mentoring	Face-to-face Office Hours	Telephone Voicemail	Email	Text Conferencing	Video Conferencing Web Conferencing	Shared Projects	

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1. Is technology in your program's strategic plan or vision ? _____ Yes _____ No

If yes, what is your plan?

Does your plan include development of faculty?

2. What geographic areas does your program serve? (Counties that are covered by your program)

3. Is the geographic area that your programs serves related to your use of technology? Please explain.

4. If you are using technology in distance education, how are you incorporating clinical education experiences?

5. What partnerships does your program have with other nursing programs and health care facilities involving the use of technology?

6. Do you have a nurse expert in informatics? _____ Yes _____ No

If yes, in what capacity does this individual assist your program in utilizing technology?

7. What percentage of faculty in your department has been trained and has delivered course content using videoconferencing?

What percentage of faculty in your department have been trained and have developed and delivered web courses?

8. Please indicate which of these tools your students regularly use in your program.

- Email
- Powerpoint
- Computer Adaptive Testing
- Web Course
- Video Conferencing
- Moderate or High Fidelity Simulation
- Personal Digital Assistants (PDA)

9. Does your program use computerized evaluation tools such as ATI?

10. Does anyone in your program have learning outcomes data concerning the use of technology? If yes, is it available?

11. Does anyone in your program have technology and education student satisfaction data? If yes, is it available?

12. What do you see as the largest challenge in moving toward greater reliance on technology in the education of nursing students?

