

**Center for Health Workforce Planning
Bureau of Health Care Access
Iowa Department of Public Health**

**Strategic Plan to Increase Access to
Health Occupations Education in Iowa
Through the Use of E-Learning**

August 2005

Developed by Timothy J. Bristol, MSN, RN

This report was made possible by grant number 6 R24HP04104-01-00 from the Bureau of Health Professions, Health Resources and Services Administration, U. S. Department of Health and Human Services.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
STATEWIDE E-LEARNING ASSESSMENT	4
Practice	4
Academia	4
Best Practices	5
RECOMMENDATIONS	7
I. Faculty Development	7
<i>TABLE 1 Faculty Development in E-Learning Program Estimated Cost – 2 Years</i>	8
II. Rural Clinical Site Alliance	8
<i>TABLE 2 Rural Clinical Site Alliance Estimated Cost – 2 Years</i>	10
III. Online Assistant Nurse Educator	11
<i>TABLE 3 Online Assistant Nurse Educator Program Estimated Cost – 2 Years</i>	12
IV. E-learning for Staff Development Personnel	13
<i>TABLE 4 E-learning for Staff Development Personnel Estimated Cost – 2 Years</i>	14
V. E-learning for Preceptor Training	15
<i>TABLE 5 E-Learning for Preceptor Training Estimated Cost – 2 Years</i>	16
VI. Statewide Seamless Community College Nursing Curriculum	16
<i>TABLE 6 Statewide Seamless Nursing Curriculum Estimated Cost – 4 Years</i>	17
VII. Statewide Simulation Consortia	18
<i>TABLE 7 Statewide Simulation Consortia Estimated Cost – 2 Years</i>	19
APPENDIX A	21
E-LEARNING IN NURSING EDUCATION IN IOWA	21
APPENDIX B	24
E-LEARNING IN HEALTH CARE DELIVERY UNITS IN IOWA	24
APPENDIX C	28
IOWA NURSING STUDENT PROFILE AND PROFESSIONAL PLAN	28
APPENDIX D	38
NATIONAL BEST PRACTICES IN E-LEARNING	38
GLOSSARY	40
REFERENCES	42
FEEDBACK PLEASE	47

EXECUTIVE SUMMARY

Shortages in health care providers are plaguing the nation. In Iowa alone, a shortage of over 9,000 registered nurses (RNs) is expected during the next two decades (Biviano, Fritz, Spencer, & Dall, 2004). Health occupations (HO) education will play a major role in assisting Iowa to deal with the projected shortfall. HO education in Health Care Delivery Units (HCDUs) will need to keep current professionals competent and abreast of the constant influx of new information and technology. HO education in colleges and universities will need to continue to provide high quality education to an increasing number of students.

The challenges that are facing HO education can be staggering in light of the many difficulties that lie ahead. Shortages of health professionals make it difficult to release staff for training sessions. Shortages in HO faculty make it difficult for HO schools to admit more students to address the shortage of professionals.

E-learning (defined in glossary) may assist with some of the challenges facing health care in Iowa. The goal of this strategic plan is to analyze solutions to increase access to health occupations education through the use of E-learning in Iowa. The flexibility and power of E-learning holds promise in addressing shortage issues by improving the quality of education for professionals and students and promoting collaboration between practice and academia.

The strategic plan recommends ways to enhance utilization of E-learning in Iowa HO education and improve E-learning competency in staff development personnel and HO faculty. It identifies how E-learning may be used to train preceptors and presents strategies for including more HO professionals from different parts of the state in the education of HO students. Additional recommendations address the acquisition, use, and sharing of high fidelity human patient simulation.

The Center for Health Workforce Planning values and invites the input of health professionals in practice and education, and the public. Comments may be directed to Eileen Gloor at egloor@idph.state.ia.us or the consultant Tim Bristol at tim@nursetim.com.

STATEWIDE E-LEARNING ASSESSMENT

Practice

The health care delivery units (HCDUs) in Iowa differ greatly in their capacity for and use of E-learning. Most of the larger HCDUs have the technology infrastructure necessary to begin or improve the utilization of E-learning (see Appendix B). These facilities use a variety of resources to meet their needs. Some use vendors such as Health Stream or NetLearning. Others use CD-based programs such as those created by the LAAP grants at the University of Iowa (UI). Some may use the online offerings from such organizations as the Iowa Foundation for Medical Care or the materials provided through certain agreements as with the Good Samaritan/University of South Dakota partnership. The larger HCDUs tend to have adequate access to the needed technology for E-learning.

Major barriers to access occur in facilities that could benefit the most from E-learning. These are the smaller acute care facilities, and a majority of the long-term care and home health organizations. Frequently, the reasons cited for limited access to E-learning in these entities include limitations in fiscal and/or human resources. While these facilities seem to experience more barriers, many stakeholders developing educational material for this market predict that smaller HCDUs will improve their access. Improvement is expected to be a result of accreditation-type requirements for communication and information management. The technology required to meet these expectations will provide these facilities with the needed infrastructure to increase employee access to current, high quality E-learning.

Across the state, staff development personnel face the challenge of understanding the role of E-learning in continuing education. Whether in small home health organizations or large multi-hospital systems, educators face the dilemma of how to use E-learning effectively. Unfortunately, the vast majority of staff development educators are not trained in the use or management of E-learning. The result is often underutilization, frustrating misuse, and missed fiscal and quality benefits for all involved.

Many large HCDUs and some of the smaller HCDUs are very involved in the clinical component of health occupations education. However, most HCDUs report that they do not collaborate with academia for staff development or for preceptor training. Effective use of E-learning in these areas holds great potential for academia and practice.

Academia

Health occupations (HO) education programs utilize a variety of E-learning resources in Iowa. These include course management systems (CMSs) for implementing and managing education online, simulation technology, and computer-assisted instruction through textbook vendors and software companies (see Appendix A).

Even with the availability of infrastructure, there is relatively little HO education online in Iowa. Western Iowa Tech Community College uses E-learning with a partially online practical nurse and associate degree nursing program. The University of Iowa offers a master of science in nursing degree program completely online and will begin a bachelor of science in nursing completion program online in Summer 2005. The Iowa Community College Online Consortium

(ICCOG) offers some completely online courses for community college students but only pharmacology for HO education (see Appendix A). The absence of a common curriculum contributes to low HO participation in fully online courses through ICCOC. In order to put a class online, at least two schools must fully accept the class. The variation in nursing curricula prohibits this.

Many faculty and administrators appreciate the potential of E-learning to improve access to and the quality of health occupations education. Contrary to empirical research, some feel that E-learning is not an appropriate tool in HO education. In either case, there is an overall lack of training in the effective use of E-learning in HO education. The use of actual tools is the most common type of faculty development in E-learning. This includes such tasks as loading Power Point ® to the Internet or attaching files to an email. While these skills are important, they pale in comparison to the ability of an instructor to truly engage the learner in the online learning environment. Teaching in this way is very different than using existing methodologies in the face-to-face classroom.

Improving access to HO education through the use of E-learning offers many benefits for the student. Some students pursuing HO education experience barriers that could be addressed through the proper use of E-learning. These students have characteristics that demonstrate competing interests with their education. In a sample of 1,300 nursing students in Iowa, over 34% are 25-years or older (see Appendix C). Twenty-nine percent are married and 32% have one or more children. When asked about barriers to beginning or completing their nursing education, many students report that finances are a large obstacle. Moreover, between 20% and 35% of Iowa nursing students are employed more than 20 hours per week to improve their financial situation. Some would agree that it is not ideal for HO students to work this many hours while they are enrolled in a course of study. However, employment is a reality that must be addressed in the current climate of financial strain and health care professional shortages. E-learning could offer more flexibility for HO students, potentially decreasing the effect of this obstacle.

Of particular interest are students who report they will work in the long-term care field. In the aforementioned nursing student survey, the largest percentages of students who will seek employment in long-term care are enrolled in community colleges. These students have the most competing interests (i.e., family responsibilities and working hours) and, at the same time, have less convenient access to E-learning technology. As a result, the students going into the facilities with the most vacancies have less access to flexible learning.

Best Practices

Prepare Iowa is an excellent example of collaboration that increases access to health occupations education through the use of E-Learning. Through a collaborative effort of practice and academia, Prepare Iowa has been created to provide completely free online continuing education for health professionals. The content focuses on public health and is flexible enough to allow different software (course management systems) to be used.

The Rural Health Education Partnership (RHEP) is a collaborative project that provides training to staff at 10 hospitals and 22 long-term care facilities in southeast Iowa. This partnership is

designed to help organizations pool resources and decrease the duplication of offerings. Some facilities use this service for mandatory staff development training and others use it for continuing education. RHEP is beginning to offer online courses. This relationship is ideal because small facilities can benefit from E-learning even if they do not have an on-site course management system such as NetLearning or careLearning.

The Iowa Foundation for Medical Care (IFMC) offers educational sessions via WebEx. This system allows participants to hear a voice over the Internet while watching the presenter's Power Point ®. If participants miss a conference, they may access the recorded session on the Internet. The IFMC hopes that by providing training in this format, more health care facilities and practitioners will access the content.

The ICCOC is a group of seven community colleges from around Iowa. They collaborate to provide fully online courses to students enrolled at any of the seven colleges. While this consortium does not offer full online health occupations education at this time, it is working toward this goal. Currently, ICCOC is an excellent example of a collaborative effort to increase access to education through the use of E-learning. It has a solid, grant-funded infrastructure that provides faculty development, adequate technology, adequate technology support, and high quality education.

Grow Our Own-RN is a collaborative project between the University of South Dakota (USD) and the Evangelical Lutheran Good Samaritan Society (Society). This program is designed to allow employees of the Society to continue working part-time as a 'front-line caregiver' while pursuing an associate degree in nursing (ADN) online. The program demonstrates collaboration by sharing digital, clinical, and human resources. In Fall 2004, the Society reported that 132 student/employees were enrolled in the program over a six state region. The program allows facilities with critical shortages to literally 'grow their own' from their current pool of employees.

The Wisconsin Technical College System has developed a Statewide Nursing Curriculum. Through this program, a nursing student can take any nursing course from any of the 16 community college nursing programs in the state. This has allowed for easier articulation between schools and promoted the effective use of E-learning. At present, all didactic nursing courses are offered online. Laboratory and clinical courses require face-to-face attendance. The flexibility has allowed students and faculty to better manage their hectic workloads.

The Indiana University School of Nursing has developed Online Communities of Professional Practice (OCPP). This program currently uses a critical care nursing course to bring faculty, practicing nurses, nursing students, and patients to the same E-learning classroom. The E-learning environment is flexible enough to accommodate the variety of schedules required of these individuals. As a result a very interactive learning environment has been created for all participants. Students may earn college credit and professionals may accrue continuing education units (CEUs).

RECOMMENDATIONS

The following recommendations are designed to stimulate discussion about Iowa's ability to increase E-learning access to health occupations education.

I. Faculty Development

Implement a comprehensive statewide HO Faculty Development in E-learning Program (FDEP). The FDEP should occur in two phases for each school. Phase 1 is attainment of technical competency. This includes the skills of entering the course management system (CMS), learning the different tools (online grade book, online discussion, file transfer), and obtaining technical support for students and instructors. This phase of training must occur using the faculty's CMS. Phase 2 is online pedagogy, the act of effectively teaching online. This training includes key components such as demonstrating effective digital communication, effectively engaging the student, encouraging critical thinking, facilitating collaboration, evaluating, and retaining online HO students. While it is not absolutely mandatory that this training occurs using the faculty's CMS, the faculty will benefit greatly by experiencing a similar environment as what their students will experience.

- A. Structure** – Each HO program/school will provide technical competency training for their faculty. It is likely this is already being done to varying degrees in most Iowa HO educational programs. An E-learning expert (EE) will then offer a three-week course on online pedagogy to the faculty in their own CMS. The EE will need access to the CMS at least one month in advance of the course. S/he will develop the course. On the start date, the faculty will enter the course as students. The training will cover online pedagogy, adult learning theory, and optimization of E-learning resources in HO education. Since the training will take place using their CMS, the faculty will have some flexibility in completing the FDEP.
- B. Fiscal Resources** – Estimated cost for a program of this nature depends on the structure. Some program administrators may feel that faculty should receive a stipend for attending the three-week online class. Others may maintain that this is part of being adequately prepared for the future. It is estimated that 300-500 HO faculty, or 20 HO education programs/schools, in Iowa need and will pursue training of this nature. The following estimate (TABLE 1) is based on 400 HO faculty, from 20 schools, over a two year period. It assumes that each HO program will have already provided technical competency training for faculty prior to online pedagogy training. It is intended to assist schools to estimate the cost of implementing a program and does not represent actual costs.

TABLE 1 Faculty Development in E-Learning Program Estimated Cost – 2 Years

Description	Quantity	Unit Cost	Total
20 faculty at 20 HO Schools	400 Faculty	\$2,500/School	\$50,000
Day long in-person seminars (includes speaker fees, printing, administration, catering)	2 per year for 100 faculty at each facility	\$10,000/Seminar	\$40,000
Stipend for completing the training	400 Faculty	\$100	\$40,000
Program Administration Fees	2 Years	\$5,000/Year	\$10,000
TOTAL for 2 year program			\$140,000

Existing Resource Comparison: A program at Indiana University Office of Lifelong Learning currently costs approximately \$1,300 per faculty member. It would not be conducted using the faculty’s CMS. Approximate cost for 400 faculty at \$1,300 per person = \$520,000.

Potential Funding Sources:

- USDA Rural Development Distance Learning and Telemedicine Grant at <http://www.usda.gov/rus/telecom/dlt/dlt.htm>
- Alfred P. Sloan Foundation at <http://www.sloan.org/grant/index.shtml>
- Center for Healthcare Workforce Planning/Iowa Department of Public Health at http://www.idph.state.ia.us/hpcdp/workforce_planning.asp
- HRSA Grant (Distance Learning; Nursing; Continuing Education) at <http://www.hrsa.gov/grants/default.htm>
- HO Education Program staff development funds

C. Responsible Parties

- Oversight Committee - Iowa Council of Nurses (ICON)
- Fiscal Agent - a participant community college or non-profit private college willing to provide in-kind services. The non-profit status is important for some funding sources.

D. Timeline – Two years will be required to complete the initial project during which the FDEP is established and implemented. A plan for sustainability must be identified during the initial project period in order to assure ongoing training of HO educators in the use of E-learning. Efforts on the part of programs that provide formal and continuing education to increase online pedagogy at affordable prices will contribute to a successful outcome for both faculty and students.

II. Rural Clinical Site Alliance

The Rural Clinical Site Alliance (RCSA) will allow schools to utilize clinical sites that may otherwise be inaccessible because of site size or location. Increasing access to clinical sites is important as HO schools frequently cite the lack of clinical space as a reason for not being able to increase enrollment. Increasing use of rural sites is beneficial for smaller communities in that their clinical sites will receive greater exposure. Increased utilization of these sites

(long-term care, small acute care facilities, home health, public health, etc.) will lead to increased opportunity for recruitment and interactions with academia. Students will also benefit as that they will develop a better understanding of health care in rural settings. E-learning will be utilized to coordinate, monitor and maintain this system. E-learning is used to keep the students, preceptors, and faculty in close communication and to facilitate high level learning and critical thinking in the student. E-learning will also be utilized to train the preceptors. The ideal scenario would have the preceptors trained in the CMS of the school from which their respective student will originate. Note: the RCSA (as discussed here) is designed to replace traditional faculty-based clinical time and not already established preceptor-based clinical. Given the current shortage of HO faculty, this may assist in providing more clinical space and not require more faculty since a preceptor will be managing the clinical for that student.

A. Structure – A demonstration project will be conducted that includes prelicensure students from a private traditional BSN program, a community college ADN program, and the University of Iowa traditional BSN program. Sixteen students (two clinical groups) will be recruited from each school for a total of 48 students. The students will participate in the RCSA for one semester. The staff at rural facilities will serve as clinical preceptors for students from partner schools. The preceptors will all complete online preceptor training. The course instructors (one from each participating school) will also complete the online preceptor training as well as online pedagogy training. Each rural clinical site will be offered \$500 to assist in installing a computer station with a printer and the Internet that will be accessible to the preceptor and student.

One course instructor will be needed from each school. This instructor will be the faculty for the 16 students from their school. They will also be the primary contact person for the preceptors. The course faculty will develop two online courses that will facilitate clinical monitoring. One online course will be for the preceptors and will serve as a primary communication tool between preceptors, the program director, and faculty. The second online course will be for the students and will serve as the portal for such activities as discussions, conferencing, care plan submission, grading, and other essential coursework. A program director will be needed to identify potential schools and clinical sites for participation and program management. This director will also serve as a resource person for faculty, preceptors, and administrators and will report to the oversight committee. While there are excellent organizations and individuals that may be able to currently fill this role, this plan will assume that a director has to be contracted.

Students, faculty, preceptors, HCDU administrators, and academic administrators will be surveyed at the end of each school year for program evaluation.

B. Fiscal Resources – Estimated costs for this program depend on a number of factors. One major factor is whether or not this program can be coordinated with other programs such as the *Faculty Development in E-learning Program* (FDEP) or the *E-learning for Preceptor Training* (EPT) program. If these programs were to be utilized for such training, costs would then be decreased for the RCSA. The

other considerations would be for the faculty load at the schools. When comparing the faculty cost of running two groups of faculty-based clinicals to having the faculty monitor the two groups with preceptors, the school may realize significant savings during that semester. As a result of these savings, the school may consider allowing faculty to share the program director responsibilities or evaluation responsibilities as an in-kind service. The following estimate is for a two-year program. Each year will consist of a semester of preceptor and faculty training as well as student, preceptor and faculty recruitment. The second semester of each year will consist of the actual clinical experience.

TABLE 2 *Rural Clinical Site Alliance Estimated Cost – 2 Years*

Description	Quantity	Unit Cost	Total
Preceptor Training (48 Preceptors + 3 Faculty) * 2 years.	102 Trainees	\$50/Trainee	\$5,100
Faculty Development in E-learning Program (Note: This is based on only having one faculty member per school-each faculty would need their own personal FDEP) * 2 years	6 Faculty	\$800/Faculty	\$4,800
Hardware/Internet Access Grant	96 Facilities	\$500/Facility	\$48,000
Program Director 50% FTE (Salary/Benefit)	2 Years	\$40,000/yr	\$80,000
Program Administration Fees (clerical supplies, phone, travel)	2 Years	\$7,500/yr	\$15,000
Program Office Space	2 Years	In-Kind	0
End of Program Evaluations/Administration and Analysis (Printing/Postage/Follow-up/etc.)	~350 surveys		\$8,500
TOTAL for 2 year program			\$161,400

Existing Resource Comparison: A program at Indiana University Office of Lifelong Learning currently costs approximately \$1,300 per faculty member for online pedagogy training. It would not be conducted in the faculty’s CMS. Approximate cost for six faculty at \$1,300 per person would be \$7,800 compared to RCSA costs of \$4,800. Indiana University also offers online preceptor training for \$25 per person but once again, this would not be in the same CMS that the preceptor would be using during clinical. Approximate cost for 102 trainees would be \$2,550 as compared to \$5,100 in the RCSA. The higher cost in the RCSA is estimated because of content development time.

Potential Funding Sources:

- USDA Rural Development Distance Learning and Telemedicine Grant at <http://www.usda.gov/rus/telecom/dlt/dlt.htm>
- Alfred P. Sloan Foundation at <http://www.sloan.org/grant/index.shtml>
- Center for Healthcare Workforce Planning/Iowa Department of Public Health at http://www.idph.state.ia.us/hpcdp/workforce_planning.asp

- HRSA Grant (Distance Learning; Nursing; Continuing Education) at <http://www.hrsa.gov/grants/default.htm>
- HCDU and HO Education Program staff development funds

C. Responsible Parties

- Oversight Committee –Iowa Council of Nurses (ICON)
- Fiscal Agent - a participant community college or non-profit private college willing to provide in-kind services. The non-profit status is important for some funding sources.

D. Timeline – Two years will be required to complete the initial demonstration project during which the RCSA is established and implemented. A plan for sustainability must be identified during the initial project period in order to assure ongoing training of faculty and preceptors. Efforts on the part of programs that provide formal and continuing education to increase online pedagogy at affordable prices will contribute to a successful outcome for both faculty and students. Improvement of preceptor training across the state will also assist in this. As for the sustainability of the actual use of rural preceptorships in place of faculty-based clinicals, the end-of-program evaluations should be analyzed for feasibility and outcomes. The oversight committee may wish to apply for a second larger project or adjust the RCSA accordingly.

III. Online Assistant Nurse Educator

The faculty shortage is a reality that is affecting most parts of the country in nursing education. Iowa is no different. With increased retirements and the low salaries of nurse educators, the problem may continue to worsen. This is not only an issue for academia, but also for practice as the faculty shortage promises to be the number one stumbling block when it comes to addressing the nursing shortage over the next two decades. Finding ways to improve the outreach of faculty and recruit more faculty is crucial. Recruiting professional nurses to become Online Assistant Nurse Educators (OANEs) may be a way to address some of these issues.

The OANE will be able to make larger class sizes manageable, improve quality, and they personally may experience the satisfaction of being a nurse educator (recruitment tool). The OANE will be brought into classrooms through the use of the CMS discussion boards, chat rooms, and email. This will allow the OANE to actively participate in the learning of the students. In essence, the OANE will be somewhat of a teaching assistant to the permanent faculty who is directing the class. Using an OANE may improve the perceived and actual quality of the learning by adding a ‘real life’ dimension to the learning. Since the OANE will be a practicing nurse, they will have recent and relevant experiences to offer the students. By being a part of the learning environment, the OANE may improve the quality of their personal practice and potentially consider pursuing further education to move into the faculty role.

A. Structure – The OANEs will be recruited from HCDUs, preferably in rural communities. Each HO program/school will provide technical competency training to its faculty and the OANEs. It is likely that this will have already

occurred for most faculty. However, the OANEs will need training in the CMS and whatever email system is used. An E-learning expert (EE) will then offer a three-week course on online pedagogy to the faculty and the OANE in their school's CMS. This training may coincide with the FDEP mentioned above. A demonstration project will be conducted in which six OANEs will be recruited for three nursing programs per year. One community college, one private school, and the University of Iowa the first year. The second year will include two community colleges and another private college. The initial three programs will continue operation into the second year. At each program three nursing faculty will be trained and one of their didactic/theory courses will be converted for E-learning. Two OANEs will work with each faculty member. A program director will be needed to identify potential schools and OANEs for participation. This director should be an E-learning expert (EE) that can assist in trouble shooting and course development. This resource person will report to an oversight committee. While there are excellent organizations and individuals that may be able to currently fill this role, this plan will assume that a director has to be contracted. Faculty, OANEs, students and the program administrator will be surveyed at the end of each semester of teaching for effectiveness and satisfaction.

B. Fiscal Resources - Estimated costs for this program depend on a number of factors. One major factor is whether or not this program can be coordinated with other programs such as the *Faculty Development in E-learning Program* (FDEP). If FDEP were to be utilized for such training, costs would then be decreased for the OANE program. The other considerations would be for the faculty load at the schools. When utilizing the OANE, it is hoped that the class size can be larger while still maintaining quality. However, during the demonstration project, the class size may be limited. The following estimate is for a two-year program. Each year will consist of a semester of OANE and faculty training and recruitment as well as course conversion from face-to-face to E-learning. A course conversion stipend will be offered at the time of the course rather than the time of release since the programs may not be able to release the faculty. The second semester of each year will consist of the actual use of the OANEs in E-learning. The three first-year participant schools will continue into the two semesters of the following year.

TABLE 3 Online Assistant Nurse Educator Program Estimated Cost – 2 Years

Description	Quantity	Unit Cost	Total
Faculty Development in E-learning Program (Note: 6 OANEs and 3 faculty per year) * 2 years	18 Faculty/ OANEs	\$2,000/School	\$12,000
FDEP training stipend	18 Faculty/ OANEs	\$100/learner	\$1,800
Course Conversion Stipend	6 courses	\$500/Course	\$3,000
Salary – OANEs (Comes out to approximately \$10/hour – based on a 3 semester hour course for managing 10-20 students); 6 OANEs year one	24 total OANE sections	\$1,500/section	\$36,000

semester two, 6 OANEs year two sem. one, 12 OANEs year two sem. two = 24 total OANE sections taught.			
Program Director 50% FTE (Salary/Benefits)	2 Years	\$40,000/yr	\$80,000
Program Administration Fees (clerical supplies, phone, travel)	2 Years	\$7,500/yr	\$15,000
Program Office Space	2 Years	In-Kind	0
End of Program Evaluations/Administration and Analysis (Printing/Postage/Follow-up/etc.)	~500 surveys		\$10,000
TOTAL for 2 year program			\$157,800

Existing Resource Comparison: A program at Indiana University Office of Lifelong Learning currently costs approximately \$1,300 per faculty member for online pedagogy training. It would not be conducted in the faculty/OANE's CMS. Approximate cost for 18 faculty at \$1,300 per person would be \$23,400 compared to OANE program costs of \$18,800 which includes stipend and administration costs.

Potential Funding Sources:

- USDA Rural Development Distance Learning and Telemedicine Grant at <http://www.usda.gov/rus/telecom/dlt/dlt.htm>
- Alfred P. Sloan Foundation at <http://www.sloan.org/grant/index.shtml>
- Center for Healthcare Workforce Planning/Iowa Department of Public Health at http://www.idph.state.ia.us/hpcdp/workforce_planning.asp
- HRSA Grant (Distance Learning; Nursing; Continuing Education) at <http://www.hrsa.gov/grants/default.htm>
- HCDU and HO Education Program staff development funds

C. Responsible Parties

- Oversight Committee –Iowa Council of Nurses (ICON)
- Fiscal Agent - a participant community college or non-profit private college willing to provide in-kind services. The non-profit status is important for some funding sources.

D. Timeline – Two years will be required to complete the initial demonstration project during which the OANE program is established and implemented. A plan for sustainability must be identified during the initial project period in order to assure ongoing training of faculty and OANEs. As for the sustainability of the actual use of OANEs in E-learning, the end-of-program evaluations should be analyzed for feasibility and outcomes. The oversight committee may wish to apply for a second larger project and proceed accordingly.

IV. E-learning for Staff Development Personnel

Staff Development Personnel (SDP) are professionals responsible for the continuing education and training of in-house staff, visiting students, community members and others

associated with the health care delivery unit (HCDU). As with other areas of health care, the SDP are utilizing more E-learning. The E-learning for Staff Development Personnel (ESDP) will help these individuals acquire the skills needed to effectively implement and manage E-learning for their different learners noted above.

- A. Structure** – The ESDP would be a four-week E-learning course that would take SDP through the various issues related to using technology in the classroom. This program could be housed in either the PrepareIowa learning portal or the Rural Health Education Partnership (RHEP). Both programs would offer excellent frameworks for managing this type of project. Another consideration is to utilize an online training tool already in place through the Indiana University School of Nursing Office of Lifelong Learning (<http://nursing.iupui.edu/LifelongLearning/default.asp?/LifelongLearning/AboutWebLearning/ResourcesOnline.htm>) called *E-learning for Staff Educators*. The only foreseeable disadvantage of using Indiana University for ESDP is that they may only be able to handle 75 SDP a year.
- B. Fiscal Resources** – Estimated costs vary greatly depending on the structure of the ESDP. The following estimate will be based on materials being created and maintained in Iowa through either PrepareIowa or the Rural Health Education Partnership (RHEP). Plans will be for 150 SDP per year to take the training in groups of 20-30 per class (minimum of 10 paid students per class) over a two year period.

TABLE 4 *E-learning for Staff Development Personnel Estimated Cost – 2 Years*

Description	Quantity	Unit Cost	Total
ESDP for 150 SDP per year from HCDUs and staff development organizations (ie. RHEP)	300 SDP	\$125/SDP	\$37,500
Stipend for completing the training	300 SDP	\$100	\$30,000
Program Director – This may be in-kind if the ESDP can be housed in RHEP or PrepareIowa	2 Years	In-Kind	
Program Administration Fees	2 Years	\$5,000/yr	\$10,000
TOTAL for 2 year program			\$77,500

Existing Resource Comparison: A program at Indiana University Office of Lifelong Learning currently costs \$290 per SDP for similar training. Costs for 300 SDP at \$290 per person would be \$87,000 compared to ESDP costs of \$77,500 which includes stipend and administration costs.

Potential Funding Sources:

- USDA Rural Development Distance Learning and Telemedicine Grant at <http://www.usda.gov/rus/telecom/dlt/dlt.htm>
- Alfred P. Sloan Foundation at <http://www.sloan.org/grant/index.shtml>
- Center for Healthcare Workforce Planning/Iowa Department of Public Health at http://www.idph.state.ia.us/hpcdp/workforce_planning.asp

- HRSA Grant (Distance Learning; Nursing; Continuing Education) at <http://www.hrsa.gov/grants/default.htm>
- HCDU professional development funds

C. Responsible Parties

- Oversight Committee –Iowa Council of Nurses (ICON)
- Fiscal Agent – PrepareIowa or the RHEP would seem to be appropriate agents.

D. Timeline - Two years will be required to complete the initial project during which the ESDP is established and implemented. A plan for sustainability must be identified during the initial project period in order to assure ongoing training of SDP in the use of E-learning. Efforts on the part of programs that provide formal and continuing education to increase ESDP utilization at affordable prices will contribute to a successful outcome for SDP in health care.

V. E-learning for Preceptor Training

Across Iowa, preceptors are being used in a variety of health care settings. However, because of shortages of faculty and nurses, some preceptors are not being adequately trained. Preceptors in HO education and in the HCDUs serve a vital role in that they guide on-site clinical learning for new hires, new graduates, and students. Preparation for this important job requires training that is often unavailable or abbreviated for a variety of reasons. About 50% of HCDUs in Iowa offer training for their preceptors in collaboration with academia (see Appendix A). No schools or HCDUs reported that they were using E-learning for their preceptor training. Developing E-learning for Preceptor Training (EPT), would allow academia and practice to collaborate on providing a high quality training experience for preceptors who serve in either setting.

A. Structure – Potential preceptors will take a one-week EPT course. This course could easily be completed on computers at home, a public library, work, or a school. After the initial certification with EPT, the preceptor may want to take a biannual refresher. This type of course will be structured in such a way that it is independent in nature. It will not have an interactive discussion component as seen in the FDEP or ESDP. This course may also easily be developed to implement in an HCDU’s CMS such as NetLearning or Health Stream. However, when it is housed there, it would not be available to outside users from other organizations. Potentially housing this program in PrepareIowa or in the Rural Health Education Partnership may make this very affordable and accessible to all preceptors.

B. Fiscal Resources – Current estimates of preceptors in Iowa for HO education, range from 1,200 to 1,800. This does not include preceptors in HCDUs that are precepting new hires and new graduates. This estimate will plan on a goal of 1,500 trained over two years. These preceptors will be those involved only in practice, only in HO education, and those involved in both.

TABLE 5 E-Learning for Preceptor Training Estimated Cost – 2 Years

Description	Quantity	Unit Cost	Total
EPT for 1,500 Preceptors	1,500	\$25/Preceptor	\$37,500
Content Development (written material only)	1 Time	\$5,000	\$5,000
Program Director – This may be in-kind if the EPT can be housed in RHEP or PrepareIowa	2 years	In-Kind	
Program Administration Fees	2 Years	\$5,000/yr	\$10,000
TOTAL for 2 year program			\$52,500

Existing Resource Comparison: A program at Indiana University Office of Lifelong Learning currently costs \$25 per preceptor for similar training. Costs for 1,500 preceptors at \$25 per person would be \$37,500 compared to EPT costs of \$52,500 with development and administrative fees. Other possibilities may be to just pay for the content to be developed and leave individual EPT fees to the discretion of the HCDUs and schools.

Potential Funding Sources:

- USDA Rural Development Distance Learning and Telemedicine Grant at <http://www.usda.gov/rus/telecom/dlt/dlt.htm>
- Alfred P. Sloan Foundation at <http://www.sloan.org/grant/index.shtml>
- Center for Healthcare Workforce Planning/Iowa Department of Public Health at http://www.idph.state.ia.us/hpcdp/workforce_planning.asp
- HRSA Grant (Distance Learning; Nursing; Continuing Education) at <http://www.hrsa.gov/grants/default.htm>
- HCDU and school professional development funds

C. Responsible Parties

- Oversight Committee –Iowa Council of Nurses (ICON)
- Fiscal Agent – PrepareIowa or the RHEP would seem to be appropriate agents if the training could take place in their infrastructure.

D. Timeline - Two years will be required to see 1,500 preceptors complete EPT. A plan for sustainability must be identified during the initial project period in order to assure ongoing training of preceptors across Iowa.

VI. Statewide Seamless Community College Nursing Curriculum

A statewide seamless nursing curriculum will be beneficial in that it will allow easier articulation between schools. When discussing the issue of E-learning for HO education, the Iowa Community College Online Consortium (ICCO) reported that a lack of common HO curricula is the barrier to implementing an online program. The Wisconsin Technical College System has implemented a statewide nursing curriculum (see Appendix A) and now students may take all of their didactic/theory courses online. Combining this with the Good Samaritan/University of South Dakota ‘Growing Our Own’ online ADN program structure

(see *Best Practices* p. 6) could provide Iowa with an excellent framework for E-learning in nursing education.

A. Structure – Since the primary goal of developing this curriculum will be to improve access to HO education (initially nursing), the participants will be solicited from the ICCOC. The ICCOC already has an extensive E-learning infrastructure that is well tested and effective. For the initial project of developing a common curriculum, four participant schools will be recruited. The program director will serve as a coordinator for the activities. Given the worsening nursing faculty shortage, a majority of the development activity will need to take place during the summers. This will be a four-year project allowing two years for common curriculum development and creation of objectives. The third year will be for schools to personalize the new curriculum and subsequently develop online material. Year four will focus on further development, revision, and initial implementation. Over the course of this process, the faculty will want to pursue Faculty Development in E-learning from ICCOC. Members of ICCOC receive this training as a benefit at no additional cost.

B. Fiscal Resources – Estimated cost for a program of this nature depends on the structure and process. The costs may be affected by faculty workloads and other available human resources. The program will have two part-time program administrators. The rationale for two at part-time is that these individuals may need to be nurse educators and it is unlikely that any one school will be able to contribute a full-time nurse educator for the duration of the program. The coordinators will recruit and assist five faculty from each school for each summer planning/development session. This means that there will be 20 faculty per summer for a total of 80 faculty involved over the four years.

TABLE 6 *Statewide Seamless Nursing Curriculum Estimated Cost – 4 Years*

Description	Quantity	Unit Cost	Total
Faculty Stipends (5 faculty per summer from each school)	80	\$3,000/fac/ summer	\$240,000
Day long in-person seminars (includes speaker fees, printing, administration, catering)	2 per year for 60 faculty at each	\$6,000/ Seminar	\$48,000
Program Administrators 2 at 50% FTE (Salary/Benefit)	4 Years	\$80,000/Year	\$320,000
Faculty Development in E-learning may not be a cost in this program because this is a service already provided by ICCOC to its members	4 Years	In-Kind	0
Program Office Space	4 Years	In-Kind	0
Program Administration Fees	4 Years	\$5,000/Year	\$20,000
TOTAL for 2 year program			\$628,000

Existing Resource Comparison: Utilizing processes and curricular structures from other states may help to decrease the work involved in this process.

Potential Funding Sources:

- USDA Rural Development Distance Learning and Telemedicine Grant at <http://www.usda.gov/rus/telecom/dlt/dlt.htm>
- Alfred P. Sloan Foundation at <http://www.sloan.org/grant/index.shtml>
- Center for Healthcare Workforce Planning/Iowa Department of Public Health at http://www.idph.state.ia.us/hpcdp/workforce_planning.asp
- HRSA Grant (Distance Learning; Nursing) at <http://www.hrsa.gov/grants/default.htm>

C. Responsible Parties

- Oversight Committee – Iowa Community College Online Consortium (ICCO) Board or the Iowa Council of Nurses (ICON)
- Fiscal Agent - a participant community college willing to provide in-kind services. The non-profit status is important for some funding sources.

D. Timeline – Four years will be required to complete the initial project during which time others may observe or potentially participate. A plan for sustainability must be identified during the initial project period in order to potentially include other schools.

VII. Statewide Simulation Consortia

The use of simulation in HO education is not a new concept. This has been done in different ways (actors as patients and non computerized mannequins) for many years. However, the use of high fidelity (computerized mannequins) simulation is relatively new. This type of simulation can provide such a high level of reality that the learner (student or professional) may feel as if they are caring for an actual human patient without the risks of harming a real person. The other advantage of the human patient simulator (HPS) is that it allows for control of the material learned.

When learners (students or professionals) are practicing in actual clinical environments, the learner may never have the experience of caring for patients with certain problems. For instance, a nurse in a small rural hospital may need to know how to manage a patient who is having excessive internal bleeding because of a recent surgery. The problem is that this situation may not occur more than once every six to twelve months in a small rural hospital. As a result, many of the nurses in that facility may not have proper training for that situation. If an HPS is utilized, the nurse may be able to practice managing that type of situation on a regular basis in a very realistic learning experience and subsequently maintain competency. The same is true for HO students. Their time in clinical is limited and may be even shorter as more schools need increased amounts of clinical access. This decreases the chances of the students actually experiencing certain clinical situations that may be critical to their training.

With the HPS, the faculty can ensure that students obtain the experiences they need regardless of what they experience in the clinical setting.

- A. Structure** – This will be a two-year program involving two collaboratives each year. Each collaborative will consist of a HCDU, a HO education program, and an emergency medical service provider (EMS). The geographic area for the collaborative should be within a 100 mile radius if at all possible to make the simlab accessible. If possible, each collaborative should include at least one partner that is considered ‘rural’ for grant purposes. The simlab will consist of a modifiable patient care area that can replicate the typical acute care setting and can handle at least two HPSs. The simlab should also include a control area, office space, and a conference area for simlab observers and for debriefings. Estimated square footage for the simlab should be around 1,200 square feet based on best practices in other facilities (site visits to University of Portland and Mount Hood Community College, Portland, Oregon, April, 2005). The equipment needed for the simlab will include such items as two HPSs (including accessories), control room hardware, conference area equipment, and consumable supplies for training. Each simlab team will consist of a director, simulation coaches and a group of scenario developers. The team should have significant representation from each of the collaborative partner organizations.
- B. Fiscal Resources** – The resources required to implement and manage this demonstration project will vary depending on in-kind donations from the partners. This estimate will offer a moderate assessment of cost based on a mix of in-kind and contracted services. This estimate assumes complete fiscal responsibility will be turned over to the partners after one year of support.

TABLE 7 Statewide Simulation Consortia Estimated Cost – 2 Years

Description	Quantity	Unit Cost	Total
Human Patient Simulator with an ‘average’ amount of accessories.	4/Year	\$50,000/HPS	\$400,000
Simlab hardware/equipment/supplies	4 Sites	\$75,000/Site	\$300,000
HPS and scenario development training (Two people from each site-partner of each collaborative – Includes travel)	12/Year = 24 Total	\$1,500/Person	\$36,000
Scenario Development (will allow for 10 per collaborative as it is expected that their will be sharing between the collaboratives; estimates based on 40 hours to develop one scenario)	40	\$800/Scenario	\$32,000
Day long in-person seminars (includes speaker fees, printing, administration, catering)	1 per year for 100 trainers at each	\$10,000/Seminar	\$20,000
Collaborative Director at each site 50% FTE (Salary/Benefits)	4 Sites	\$40,000/Site	\$160,000
Simlab Space (assumes that space will be provided)	4 Sites	In-Kind	0

in one of the partner facilities)			
Program Office Space	4 Sites	In-Kind	0
Program Administration Fees (only provide for one year)	4 Sites	\$5,000/Site	\$20,000
TOTAL for 2 year program			\$968,000

Existing Resource Comparison: Utilizing processes and curricular structures from other states may help to decrease the work involved in this process. This might include scenarios that have been previously developed. Potential Funding Sources:

- USDA Rural Development Distance Learning and Telemedicine Grant at <http://www.usda.gov/rus/telecom/dlt/dlt.htm>
- Alfred P. Sloan Foundation at <http://www.sloan.org/grant/index.shtml>
- Center for Healthcare Workforce Planning/Iowa Department of Public Health at http://www.idph.state.ia.us/hpcdp/workforce_planning.asp
- HRSA Grant (Distance Learning; Nursing; Homeland Security) at <http://www.hrsa.gov/grants/default.htm>

C. Responsible Parties

- Oversight Committee –Iowa Council of Nurses (ICON)
- Fiscal Agent - a participant community college or HCDU willing to provide in-kind services. The non-profit status is important for some funding sources.

D. Timeline – Two years will be required to complete the initial project during which time others may observe or potentially participate. A plan for sustainability must be identified during the initial project period in order to potentially include other partners and replicate the program in the future. Each collaborator will also want to evaluate sustainability as they will lose financial support after the first year.

APPENDIX A

E-LEARNING IN NURSING EDUCATION IN IOWA Current Practice and Potential Strategies

EXECUTIVE SUMMARY

This report is submitted to inform the development of a *Strategic Plan to Increase Access to Health Occupations Education in Iowa through the Use of E-learning*. Iowa nursing educational units are using a variety of services and E-learning tools to meet the needs of nursing students. Not all schools are using all tools. These tools include Course Management Systems, Computerized Simulation, Computerized Testing, and Online Faculty Development.

Strategies for consideration to assist Iowa nursing educational units to meet the needs of the Iowa health care industry over the next two decades.

- Statewide E-learning Faculty Development Program – There are two programs in the state of Iowa that offer good examples of how this may be accomplished. They are the Iowa Community College Online Consortium (ICCO) and the WebCT Institute Workshops at University of Northern Iowa (UNI). If E-learning is utilized to facilitate this program, faculty may gain even more benefit. In the WebCT Institute Workshops at UNI, one of the workshops is a 2-week online program in which faculty train in the same environment in which they will be teaching.
- Statewide Seamless Nursing Curriculum – The ICCOC has noted that one roadblock to bringing more courses online in the health occupations (and other professions) is the lack of agreement on curriculum. When a new course is considered for ICCOC, there must be at least 3 schools that will accept it for their program. The newly implemented statewide curriculum for nursing in the Wisconsin Technical College System (WTCS) has allowed all nursing theory courses to be online. Provided there is space available in the online course, any student in the WTCS can take these courses.
- E-learning for Preceptor Training – A statewide preceptor training program would be useful to all nursing programs and health care delivery units (HCDUs). This could be a joint venture between practice and academia as both entities could use this service to prepare those who are training nursing students, new graduates, and new hires.
- E-learning for Clinical Students – As is noted above, more students are going to be receiving their clinical training from professionals outside of academia. The congestion of the clinical training sites is going to also necessitate the use of clinical sites farther away from the academic institution. The flexibility and efficacy of the asynchronous discussion allows for academicians to stay in touch with these students, monitor their professional development, and provide increased resources.
- E-learning Teaching Assistants (TAs)– The E-learning environment is ideal for utilizing the teaching assistant to improve nursing education. The TA will monitor groups of 20 students with the goal of keeping them engaged and focused on the competencies of the course. The faculty member oversees all the groups for a particular course. One of the best parts of this type of program is that the TA can be a professional nurse because the flexibility allows them to stay in practice while participating in academia. The TA may also be called an online mentor.

Data was acquired from 14 (out of 18) schools with practical nurse and associate degree nursing programs and 7 (out of 14) schools with baccalaureate nursing or higher degree programs. Data was also gathered from a variety of organizations including IACN, IBON, ICCNEDA, ICCOC, ICON, IDPH, and IHA (refer to glossary). Resources such as textbooks, research from the professional literature and seminars have also been utilized. A complete bibliography can be found at www.nursetim.com.

CURRENT USE, PRACTICE and OBSERVATIONS

- Course Management Systems – E-learning platforms such as WebCT and Blackboard are used mostly by bachelor of science in nursing (BSN) and master of science in nursing (MSN) programs. eCollege is used mostly by Community Colleges particularly through the ICCOC.
- Computerized Testing Services – E-learning solutions that allow for tracking of student progress through computerized testing. A variety of services are being used in nursing educational units. HESI (2) and ATI (6) are the most widely used computerized testing services by respondents.
- Virtual Computer Simulation – Computer and mannequin simulators are used in varying degrees around the state.
- Preceptor/Adjunct Training – Most preceptor training is done through faculty face-to-face interactions with preceptors. Initial survey data from HCDUs reveals that approximately 50% are actually collaborating with academia to train preceptors and mentors. No academic units and only two practice units have reported using E-learning to train preceptors or adjuncts. This points to a potential opportunity for connecting academia and practice through the flexibility of E-learning.
A need for additional *clinical space and faculty* has been noted in recent years. Therefore, more professionals from outside of academia are going to be involved in providing the clinical part of nursing education. E-learning provides an excellent opportunity to train preceptors and adjuncts to provide high quality clinical experiences for nursing students, new graduates, and new hires. The use of E-learning could also be utilized to keep preceptors/adjuncts in communication with academic professionals through the use of email and the asynchronous discussion. The flexibility of E-learning utilized in this way allows an increase in preceptor/adjunct professional development with minimal strain on both academia and practice.
- Courses Taught with E-learning – Most of the courses being taught with E-learning are Pharmacology, Nursing Theory, and Nutrition. There are some programs that have all or most of their courses in some type of E-learning format (fully online or hybrid) with the exception of skills and clinical type courses. The RN-BSN and MSN programs have more courses completely online than prelicensure programs.
- Faculty Development – Most programs offer some type of faculty development related to computers and E-learning. However, the majority of this faculty development is related to operating E-learning tools. This may include setting up an electronic grade book, putting a Power Point presentation on the Internet, or creating learning activities. These programs do not focus on the theory of creating an interactive and effective learning experience. The need for this type of training is as vital for E-learning as it is for face-to-face

education. When the E-learning environment is not interactive and effective, student attrition and instructor burn-out is high. Current literature on E-learning reveals that faculty report an improvement in their face-to-face teaching practice when they train for creating an effective and interactive E-learning experience.

APPENDIX B

E-LEARNING IN HEALTH CARE DELIVERY UNITS IN IOWA Current Practice and Potential Strategies

EXECUTIVE SUMMARY

This report is submitted to inform the development of a *Strategic Plan to Increase Access to Health Occupations Education in Iowa through the Use of E-learning*. Iowa Health Care Delivery Units (hospitals, long-term care facilities, home health agencies, assisted living facilities, etc.) are using a variety of strategies and technologies to meet the staff development needs of their health care personnel. As might be expected, the use of E-learning and related technologies is less prevalent in units with fewer employees.

Strategies for consideration that would use E-learning to improve access to health occupations education (staff development and academia) and improve collaboration between Health Care Delivery Units and academia (colleges and universities).

- Online Communities of Professional Practice (OCPP) – The OCPP is a concept derived from a team strategy used in business. It will bring practice and academia together for collaborative learning. In the OCPP the practitioner will be a mentor and/or teaching assistant (TA) for the students in an online course. There will be a faculty member to direct the course and serve as a resource for the mentor/TA. This relationship offers many benefits. The practitioner will acquire continuing education units (CEUs) and the student will receive training directly from those involved in practice. The Health Care Delivery Unit will benefit because staff members who interact with students tend to display more professionalism and improve their quality of care delivery. Academia will benefit from the wealth of current experience that the mentor/TA brings to the course.
- Statewide Train the Trainer for E-learning – To effectively implement E-learning, staff development educators need training. The training should focus on how adults learn online and how to utilize the technology. There is no Train the Trainer program for E-learning in Iowa. The Rural Health Education Partnership is working with Indian Hills Community College on the use of E-learning. This relationship may be an excellent venue for this type of training to be offered statewide.
- E-learning for Preceptor Training – A statewide preceptor training program would be useful to all academic programs and Health Care Delivery Units. This could be a joint venture between practice and academia as both entities could use this service to prepare those who are training students, new graduates, and new hires.
- Iowa E-learning Alliance (IEA) – The IEA would focus on increasing E-learning in staff development and continuing education. It would include training for practice and academic preceptors. It would include training on how to use E-learning in staff development. IEA would also include training for mentors/TAs in the OCPP. Finally, IEA would be an ideal strategy to provide continuing education by sharing financial and human resources across the state.
- Simulation Technology Sharing – Computerized simulation mannequins can provide practitioners and students with very effective training in an environment that is safe and quite realistic. Unfortunately, these technologies can be expensive and out of reach for

single and smaller institutions. Oregon has set a great example by developing regional Simulation Alliances. Practice units and academia in different parts of the state combine resources to develop simulation labs. These labs are being used to train students and professionals in allied health, medicine, and emergency services.

- Electronic Resource Sharing – The cost of current professional literature is prohibitive to many smaller Health Care Delivery Units. Electronic resources are also financially out of reach for many. Health Care Delivery Units may be able to develop agreements with local community and private colleges whereby their staff have access to those resources. This agreement could be facilitated if practitioners serve as preceptors and consultants for the school. In exchange the practitioner gains access to the school's holdings. This agreement may also be realized by combining library holdings. The small hospital library could become part of the community college district holdings.

Data was acquired from 42 Health Care Delivery Units ranging in size from 25 to 6,500 employees. This included acute care, long-term care, independent living, and home health agencies. Data was also gathered from a variety of organizations including the Iowa Association of Homes and Services for the Aging, Iowa Foundation for Medical Care, Iowa Health Care Association, IBON, ICON, IDPH, IHA, IONL, ISHET and University of Iowa (refer to glossary). Resources such as textbooks, research from the professional literature and seminars have also been utilized. A complete bibliography can be found at www.nursetim.com.

CURRENT USE, PRACTICE and OBSERVATIONS

Practice/Academia Collaboration – Collaboration has been a major theme in the collection of data for this strategic plan. Smaller practice units (rural hospitals, long-term care facilities, etc.) are requesting more collaboration with academia. This collaboration is being requested to address issues such as recruitment, retention, and staff development. Practitioners at smaller facilities have the challenge of being proficient in a variety of specialties. E-learning will be an excellent venue to help these practitioners gain access to research-based best practices. About 40% of Health Care Delivery Units in Iowa report collaboration with academia.

Course Management Systems – E-learning Platforms such as NetLearning, Health Stream, and careLearning are used mostly in acute care facilities. These platforms provide an organized way to deliver self-study modules to personnel. These are used primarily for mandatory annual training to meet regulatory guidelines.

PrepareIowa.com – PrepareIowa is a collaborative project whereby continuing education is offered related to public health issues. In collaboration with public health officials in South Dakota, Nebraska and the University of Illinois, the Iowa Department of Public Health has developed a learning management system free of charge to health care professionals. The focus of this system is to enhance public health efficacy throughout the state. “Planning for and being prepared to respond to emerging threats is at the heart of this collaborative effort.”

(www.prepareiowa.com, 2004)

Rural Health Education Partnership - The Rural Health Education Partnership (RHEP) is a collaborative project that provides training to staff at 10 hospitals and 22 long term care facilities in Southeast Iowa. This partnership is designed to help organizations pool resources and decrease the duplication of offerings. Some facilities use this service for mandatory Staff Development training and others use it for continuing education. RHEP is beginning to offer online courses.

This relationship is ideal because small facilities can benefit from E-learning even if they do not have an on-site course management system such as NetLearning or careLearning.

Learning Anytime Anywhere Partnership – This is a partnership of private and public organizations that are focusing on the improvement of geriatric-focused education. One of their main activities is to provide online certification and continuing education for CNAs. The project will not only provide training in geographically remote areas but also assist ESL students to improve their English proficiency.

Virtual Computer Simulation – Computer and mannequin simulators are used in varying degrees around the state. One of the more advanced mannequin systems, SimMan, is being used at Covenant Medical Center in Waterloo, and University of Iowa Hospitals and Clinics in Iowa City. Training with this type of equipment is very effective. It allows the learner to develop practice proficiency in situations they are unlikely to encounter frequently during their regular duties.

Preceptor/Adjunct Training – Most preceptor training is done through faculty face-to-face interactions with preceptors. Survey data from Health Care Delivery Units reveals that approximately 50% are actually collaborating with academia to train preceptors and mentors. No academic units and 10% of practice units reported using E-learning to train preceptors or adjuncts. This creates a potential opportunity for connecting academia and practice through the flexibility of E-learning.

Current research in nursing education reveals a need for additional clinical space and faculty. Therefore, it is likely that more professionals from outside of academia are going to be involved in providing the clinical part of nursing education. E-learning provides an excellent opportunity to train preceptors and adjuncts to provide high quality clinical experiences for students, new graduates, and new hires. The use of E-learning could also be utilized to keep preceptors/adjuncts in communication with academic professionals through the use of email and the asynchronous discussion. The flexibility of E-learning utilized in this way will enhance preceptor/adjunct professional development with minimal strain on both academia and practice.

Staff Development Educator Training – Training of staff development educators is offered in larger venues such as Iowa Society for Health Education Trainers (ISHET) seminars. Training to be an educator is either obtained on-the-job or as a degree offering. Training for staff development educators could be offered in the E-learning environment. No training about E-learning for staff development educators was reported in the state of Iowa.

Internet Access in Small Towns – A survey of Internet access reveals that some small towns do have Internet Access. Random analysis of 36 towns with populations of between 100 and 1,000 people revealed that 25 towns did have Internet access with only one confirmed ‘No’ and 9 unable to confirm. There are 576 cities in Iowa between 100 and 1,000 people which accounts for 8.2% of Iowa’s population. No cities over 1,000 were found to be without Internet access. Seven of these towns have high speed Internet available. None of these towns are closer than 20 miles to a large city. High speed satellite Internet is available for \$99 down and \$99/month from Direcway.com. See below (Sample of Internet Access in ‘Small’ Towns) for more Internet availability data.

Sample of Internet Access in 'Small' towns.

Data collected from U.S. Census 2000 Data; local libraries, inquiries from internet providers, Yahoo Maps

City/County	Population	*ISP	Dial Up	High Speed	Location	Dist From City > 10,000
Arion city, Crawford County	136		No		Mid western	60
Ricketts city, Crawford County	144	http://www.pionet.net/se	Yes		Mid western	25
Geneva city, Franklin County	171	http://support.earthlink.r	Yes		North Central	45
Blairsburg city, Hamilton County	235	http://support.earthlink.r	Yes		Mid Central	45
Arthur city, Ida County	245	Sac County Mutual Pho	Yes	Yes	Mid western	60
Waucoma city, Fayette County	299	http://support.earthlink.r	Yes		North East	30
Danbury city, Woodbury County	384	http://support.earthlink.r	Yes		Mid western	40
Colesburg city, Delaware County	412	http://support.earthlink.r	Yes		North Mid East	30
Bonaparte city, Van Buren Cty	458	Call Library at (319) 592	???		South East	40
Lime Springs city, Howard Cty	496	http://support.earthlink.r	Yes		North Central	60
Lime Springs city, Howard Cty	496	Media Com	Yes	Yes	North Western	20
Dow City city, Crawford County	503	"Town does per the Libr	Yes		Mid Eastern	60
Doon city, Lyon County	533	http://support.earthlink.r	Yes		North West	30
Bayard city, Guthrie County	536	Iowa Telecom	Yes	Yes	Middle	25-30
Burt city, Kossuth County	556	INS	Yes	Yes	North Central	100
Oxford Junction city, Jones Cty	573	http://support.earthlink.r	Yes		Mid Eastern	40
Blairstown city, Benton County	682	NetINS through Coon Creek f	Yes	Yes	Mid Eastern	25
Whiting city, Monona County	707	http://support.earthlink.r	Yes		Western	30
Albert City city, B.Vista County	709	http://support.earthlink.r	Yes		North West	60
Wellsburg city, Grundy County	716	http://support.earthlink.r	Yes		Central	40
Sioux Rapids city, B.Vista Cty	720	http://support.earthlink.r	Yes		Mid western	70
Wall Lake city, Sac County	841	Cornbelt Phone Compa	Yes	Yes	Mid western	25
Primghar city, O'Brien County	891	http://www.pionet.net/se	Yes	Yes	North Mid Western	60
Lansing city, Allamakee County	1,012	http://support.earthlink.r	Yes		North East	100
George city, Lyon County	1,051	http://support.earthlink.r	Yes		West	40
Calmar city, Winneshiek County	1,058	http://support.earthlink.r	Yes		North East	45
Hamburg city, Fremont County	1,240	http://support.earthlink.r	Yes		South West	60
Sanborn city, O'Brien County	1,353	http://www.pionet.net/se	Yes	Yes	North Mid Western	
Hartley city, O'Brien County	1,733	http://www.pionet.net/se	Yes	Yes	North Mid Western	25
Hartley city, O'Brien County	1,733	http://support.earthlink.r	Yes		North West	80
Reinbeck city, Grundy County	1,751	http://www.pionet.net/se	Yes		Mid Eastern	
Pocahontas city, Pocahontas Cty	1,970	http://support.earthlink.r	Yes		North Mid	70
Northwood city, Worth County	2,050	http://support.earthlink.r	Yes		North Central	80
Grundy Center city, Grundy Cty	2,596	http://www.pionet.net/se	Yes	Yes	Mid Eastern	
Sibley city, Osceola County	2,796	http://support.earthlink.r	Yes		North West	50
Garner city, Hancock County	2,922	http://support.earthlink.r	Yes		North Central	60
Denison city, Crawford County	7,339	http://www.pionet.net/se	Yes		Mid western	

*For complete ISP Information Contact: tim@nursetim.com

APPENDIX C

IOWA NURSING STUDENT PROFILE AND PROFESSIONAL PLAN

EXECUTIVE SUMMARY

This report is submitted to inform the development of a *Strategic Plan to Increase Access to Health Occupations Education in Iowa through the Use of E-Learning*. Data was collected from 1,334 nursing students in the state of Iowa (TABLE 1) to learn about student demographics and their professional plans. The data reveals that many students have competing interests with school. Therefore, flexibility of E-learning may assist in meeting their educational needs. An analysis of post graduation plans demonstrates that many nursing students are planning careers in acute care Health Care Delivery Units. However, it should also be noted that the students who report a desire to practice in long-term care, are those students who report the most barriers to education. Qualitative comments provide insights and serve as the foundation for strategies to improve access to formal and continuing education.

Strategies for consideration that would use E-learning to improve access to health occupations education (staff development and academia) and improve collaboration between health care delivery units and academia (colleges and universities):

- Computer Lab Access in Health Care Delivery Units - The Health Care Delivery Units may wish to increase availability of computer labs to employees who are students. The data reveals that 21% (TABLE 11) of students are accessing the Internet from work. Comparing this group of nursing students with a group of ICCOC students (3,929 all online) reveals that students who use online learning tend to work more hours per week. (TABLE 7). The ICCOC has collected pre-course data from their online students (community college students mostly in non-health care programs). This data serves as an appropriate comparison for identifying demographics conducive to E-Learning. Often the hospital computer lab and library are closed during non-business hours. By reconsidering policies for lab and library hours of operation, the Health Care Delivery Units may offer an important service to their employees. Allowing employees increased computer/Internet access will provide more flexibility in the students' management of education and employment responsibilities.
- Access for Students Working in Smaller Facilities - Smaller Health Care Delivery Units tend to have few computers and/or minimal Internet access. With increasing use of technology for staff development and regulatory activities, these facilities may wish to consider the creation of more Internet access stations. The stations would assist in meeting regulatory requirements and encourage staff to consider furthering their education (see Professional Plans data/discussion on page 8). Access to course materials at the work place may encourage some in their academic pursuits. Given that many nurses in these smaller facilities graduate from community colleges, this will assist those (18% of community college students-TABLE 10) who do not have Internet access at home. The financial benefit to the Health Care Delivery Units may come in lower turnover and in retention of staff as they further their education.

- Competing Interests and Barriers - Community college nursing students have more competing interests and barriers to education than do other students. Overall, they have more family responsibilities (TABLE 4,5,13,14), they work more hours (TABLE 6), and live farther from school (TABLE 9,13,14). Data from the ICCOC reveals that 33% of respondents would not take their current course if it were not offered online. Analysis of related qualitative comments reveals that most of these students listed work, family, or length of school commute as the reasons why they take online courses and cannot take face-to-face classes. Access to nursing education through E-learning, provides flexibility to these very busy students. A completely online LPN and/or ADN program would serve this population very well.
- Required Computer/Internet Purchase – The data reveals that students with the most competing interests and barriers (TABLEs 4-6,9,13,14) are less likely to have a computer and Internet access at home (TABLE 10,11). One solution is to require students to purchase a computer and Internet access as part of their educational program. The estimated cost of a computer is \$300-\$1000. The estimated cost of dial-up Internet service ranges from \$100-\$200 per year. If these are required purchases, they will be covered by financial aid in most cases. This is currently done with handheld personal digital assistants (Palm ® Pilots) in some nursing schools. In doing this, the students who need flexibility the most, will have the tools to better access E-learning. These students will also be better prepared for the increased use of technology in health care as a whole.

Nursing Student Survey – Spring, 2005

During Spring of 2005, ten Iowa nursing schools were invited to participate in a student profile survey. All ten schools accepted the invitation. Participating were five private schools (BSN and BSN-Completion (C) students), four community colleges (LPN and ADN students) and the University of Iowa (BSN, BSN-C, and MNHP students). The participants were prelicensure students except for the BSN-C students (n=38, 3%) who already possess a RN license. The surveys were either emailed to the students by the school or distributed in class. No schools reported students refusing the survey. However, some schools stated that there may have been student absences on the day of survey administration. Therefore, the estimated response rate ranged from 85%-95%.

TABLE 1-Overview

Category	n	%
Total Participants	1334	100%
Male	108*	8%
Female	1225	92%
LPN	316**	24%**
ADN	279	21%
BSN	626	47%
BSN-C	38	3%
MNHP	76	6%
Private School	297	22%
Community College	594	45%
University of Iowa	443	33%

*Not 1,334 total because of non-response.

**More than 1,334 (100%) because some LPN students reported ADN intentions as well.

The large majority of the participants were enrolled in LPN (24%), ADN (21%) and BSN (47%) programs.

TABLE 2-Age

Category	Range	Mean	Standard Dev.
All Participants	18-61	25.6	7.8
Male	18-56	28.47	9.1
Female	18-61	25.4	7.68
LPN	18-59	28.96	8.84
ADN	19-61	29.6	9.24
BSN	19-51	21.59	3.19
BSN-C	19-54	29.6	11.4
MNHP	22-56	28.25	6.36
Private School	19-54	23.17	6.3
Community College	18-61	29.3	9.04
University of Iowa	19-56	22.4	4.1

TABLE 3-Age comparison with ICCOC

Category	≤24 years	>24 years
All	65.4%	34.6%
Private School	86.0%	14.0%
Community College	40.0%	60.0%
University of Iowa	86.2%	13.8%
ICCOC	52.0%	48.0%

An analysis of nursing student age reveals that many nursing students are over the age of 24. While chronological age is not the only requirement for classification as an adult learner, it does suggest that nursing schools have many adult learners enrolled. E-learning is ideally suited to promote excellence in adult learning. When comparing to all online students (of whom very few are nursing students), the ICCOC data reveals that online students tend to be older.

TABLE 4-Married Nursing Students

	n	% Total of Each Category
Total Participants	380	29%
Male	38	35%
Female	342	28%
LPN	151	48%
ADN	129	46%
BSN	59	9%
BSN-C	14	36%
MNHP	27	36%
Private School	49	17%
Community College	280	47%
University of Iowa	51	12%

The data reveals that many nursing students are married (29%). Once again, this demonstrates the potential for competing responsibilities that these students have to consider as they pursue their education.

TABLE 5-Number of Children

Category	0 Children		1 Child		>1 Child	
	n	%	n	%	n	%
Total	912	68%	121	9%	301	23%
Male	71	65%	6	6%	31	29%
Female	841	69%	115	9%	269	22%
LPN	117	37%	58	18%	139	44%
ADN	118	42%	39	14%	121	44%
BSN	591	94%	17	3%	17	3%
BSN-C	25	66%	2	5%	11	29%
MNHP	61	80%	4	5%	11	14%
Private	258	87%	13	4%	26	9%
Com. Coll.	235	40%	97	16%	262	44%
U. Iowa	419	94%	11	3%	13	3%

Nursing students with children account for 32% of all participants. This is important to note as funding for day care assistance to students is in jeopardy of disappearing (K. Van Steenhuyse, personal communication, March 29, 2005). Analysis of ICCOC data reveals that many students talk about their children when giving reasons for the use of E-learning. The ICCOC data is from students enrolled in community colleges. This is important because 85% of the students with children in TABLE 5 are community college students. Flexibility to complete some nursing studies from home will help students manage this area of their lives.

TABLE 6-Hours worked per week

Category	Range	Mean	Standard Dev.
All Participants	0-80	14.97	12.36
Male	0-70	16.76	14.95
Female	0-80	14.81	12.1
LPN	0-70	18.1	14.31
ADN	0-80	15.99	13.02
BSN	0-50	12.83	10.11
BSN-C	0-45	21.64	14.8
MNHP	0-44	12.09	12.38
Private School	0-50	14.38	11.53
Community College	0-80	17.14	13.76
University of Iowa	0-44	12.46	10.25

TABLE 7-Hours worked per week comparison with ICCOC

Category	0 hrs	1-20	21-30	>30 hrs
All	24%	50%	16%	9%*
Private School	20%	55%	16%	8%*
Community College	24%	40%	19%	16%*
University of Iowa	26%	51%	11%	12%
ICCOC	18%	14%	15%	53%

*Totals not 100% because of non-response of some participants.

Employment is an important part of many nursing students' lives. The data reveals that overall nursing students work approximately 15 hours per week. ICCOC data analysis (from 3,929 community college students taking online courses) reveals that the general online student tends to be working more than the nursing students surveyed.

TABLE 8-Academic Profile

Category	Mean # of Semester Hours	Estimated Year of Graduation (% Participants)*		
		2005	2006	2007
All Participants	13.2	48%	32%	19%
LPN	12.66	67%	27%	4%
ADN	12.19	75%	24%	1%
BSN	13.76	28%	36%	36%
BSN-C	11.53	42%	24%	34%
MNHP	16.16	37%	61%	1%

*Totals not 100% because of non-response of some participants.

On average, nursing students are taking 13 credits during the Spring 2005 semester. Forty-eight percent plan to graduate in 2005.

TABLE 9-Miles one-way to school – Only reports of < 100 miles were considered for BSN students because some listed mileage to permanent residence.

Category	Range	Mean	Standard Dev.
All Participants	0-92	14.31	17.93
Private School	0-90	12.91	19.37
Community College	0-92	21.75	18.45
University of Iowa	0-70	4.88	9.95

The commute to school can be an issue for some students. It is worth noting that the group who is more likely to be married, more likely to have children, and more likely to be working more than 20 hours per week, also has the longest commute to school. This supports the notion that

adult learners in all nursing schools (private and public) may benefit from the flexibility of E-learning.

TABLE 10-Do you have the following at home? (% Participants)*

Category	Computer	Internet	High-speed	High-speed Not Available
All Participants	95%	89%	58%	3%
Private College	95%	92%	61%	1%
Comm. College	92%	82%	44%	7%
University of Iowa	97%	95%	75%	0.5%

*Participants are able to select multiple items (ie. Computer, Internet, and High-speed)

TABLE 11-Where do you access the Internet for personal use? (% Participants)*

Category	Work	Relative's Home	School	Home
All Participants	21%	16%	64%	85%
Private College	18%	15%	76%	89%
Comm. College	13%	16%	50%	77%
University of Iowa	35%	16%	76%	93%

*Participants are able to select multiple locations (ie. Work, School, and Home)

Personal ownership of computers and Internet access is lowest for those who have the most competing interests and barriers to education. This data also reveals that high-speed Internet is available to most students. This is important as some E-learning uses more bandwidth to disseminate learning objects such as video and sound clips.

TABLE 12-An important reason for choosing their current nursing program (% Participants)

Category	Location	Reputation	Online Offerings	Wait List Elsewhere
All Participants	44%	39%	1%	2%
Private College	38.4%	52%	0%	3%
Comm. College	55%	14%	3%	2%
University of Iowa	33%	64%	0.7%	0%

The data reveals that the location of the school is an important issue to nursing students. By offering more E-learning, this issue may become less important as the nursing education will be available to students all over the state.

TABLE 13-Obstacles to starting nursing program (% Participants)

Category	Childcare	Finances	Long Commute	Wait List
All Participants	6%	60%	4%	4%
Private College	3%	70%	3%	1%
Comm. College	12%	61%	6%	6%
University of Iowa	1%	51%	1%	3%

TABLE 14-Obstacles to graduating (% Participants)

Category	Childcare	Finances	Long Commute	Academic Ability
All Participants	5%	42%	2%	27%
Private College	2%	52%	2%	26%
Comm. College	8%	39%	4%	31%
University of Iowa	2%	41%	1%	21%

Finances play a major role in the self-perceived success of nursing students. In many cases, the students offered qualitative data that reveals that number of hours working is interfering with their education. E-learning can offer flexibility that will help nursing students to better manage the many facets of their lives.

PROFESSIONAL PLANS OF NURSING STUDENTS

TABLE 15-Do you plan to change employers after graduation? (%Participants)*

Category	Yes	No	Unsure
All Participants	73%	18%	8%
Private College	82%	11%	5%
Comm. College	66%	26%	7%
University of Iowa	77%	11%	11%

*Totals not 100% because of non-response of some participants.

TABLE 16-Choice of employment after graduation (% Participants)

Vocational Choice	All	LPN	ADN	BSN
Hospital Inpt/OR/Psych/Peds	71.4%	60.1%	70.6%	76.4%
Hospital Outpatient/ED/EMS	7.2%	9.2%	6.5%	7.2%
Long-term Care	5.5%	15.2%	5.7%	1.4%
Rehabilitation	0.4%	0.0%	0.4%	0.6%
Hospice	1.9%	3.2%	3.2%	0.8%
Clinic/Ambulatory	5.0%	9.2%	2.5%	4.0%
Business/Phrm Representative	0.4%	0.3%	0.0%	0.3%
Public Health Nursing	2.8%	1.9%	3.9%	2.6%
Home Care	1.6%	2.5%	2.5%	1.3%
Visiting Nurse/Parish Nurse	0.1%	0.3%	0.4%	0.0%
School Nurse	1.6%	1.9%	2.5%	1.0%
College or University	0.7%	0.3%	0.0%	1.0%
Prison/Corrections Nursing	0.4%	0.6%	1.1%	0.2%
Military Service*	0.4%	0.0%	0.0%	0.8%
Missions/Ministry*	0.1%	0.0%	0.0%	0.2%
Further Education*	0.7%	0.0%	0.4%	1.1%
Independent Prac/Consultant	1.1%	1.3%	0.7%	1.3%
Uncertain at this time*	1.3%	0.6%	2.2%	1.3%

*Data gathered through the use of 'Other' qualitative remarks.

The data reveals that a majority of nursing students are bound for inpatient acute care settings, followed by outpatient and long-term care settings. Most students (73%) report that they will be changing employers upon graduation. Considering that nursing students are frequently employed by Health Care Delivery Units, it is not surprising that many (18%) will not change employment after graduation.

One item to note is that the group with the most competing interests and barriers (community college students) is the group most likely to not change employers after graduation. This is important because this group is most likely (20.9%) to work in long-term care which has the highest rate of turnover in the state. This is also important because E-learning may offer enough flexibility to encourage other employees in long-term care (CNAs, clerks, dietary) to pursue nursing degrees that they could use in their current facility.

TABLE 17-Representative qualitative comments related to the use of E-learning.

Type of Student	Comment
LPN	Many of us took online vs. face-to-face because of flexibility but it is not that flexible with due dates.
	Create online RN program to allow more students to participate.
	More programs available in my location (RN).
	More spots available for the online RN program.
	I know of several people who would take an online RN program if it were offered or more readily available.
	Would benefit from an RN program at XXXXX.
	Need RN program in XXXXX with lectures.
	We need more spots at the Outreach Campus so LPN students do not have to wait 2 years to continue into the RN program.
	Denison could use a RN program.
	Need a course on pathophysiology.
	Need instructor availability and tutoring.
	Contact internet service providers and attempt to get a discount for students.
	Do not raise tuition for new programs.
	All schools are so different information wise.
ADN	Computer lab desk is rude/not helpful or knowledgeable. Option to do it at home would mean less time on campus.
	I think it would be great for people in rural areas because of the cost of commuting and because of time children spend in daycare. Will also help balance work/study/family.
	Cannot afford internet. Some access can be limited when using certain computers (ie. business). Finding help with academics is difficult when living far away. Support system at school is almost non-existent.
	I have enjoyed the classes I have taken online and would definitely take more.
	I have taken 3 computer-based courses in the last two years. I appreciate the convenience (not having to drive, can work on classes day/night) everyone in class gets to participate actively in discussions.

Type of Student	Comment
	Do not personally care for Internet learning, especially with nursing, where human interaction is key.
	E-learning is okay if guide or outline and support are provided. Also, based on my experience., E-learning takes up more time or is time consuming compared to classroom setting. It is not advisable if one has a full-time job.
BSN	Web access is limited for some. Decrease amount of work requiring use of the Web or improve access.
	Do not put lectures online.
	Use only one web-based program. Do not use both WebCT and Blackboard.
	I don't like E-learning. It takes the focus off teachers making them obsolete. We don't pay thousands of dollars to go here to listen to lectures on-line. I don't think it helps learning. I think it hurts it in the long run.
	Taking classes online is difficult. It replaces teachers and the one on one learning is slowly disappearing. Why not have a combination of Internet, lectures, and hands on for those that learn best in different ways?
	Regardless of how many hours a nursing student spends learning on/using a computer, nursing is an 'interacting' career and we must have class time to learn the art of nursing which is as equally important as the science /skills part of nursing. E-learning alone does not prepare a nurse properly.
	I learn better in a structured organized classroom setting.
	Internet learning has not worked well for me since I do not have the internet at home. Also, it is harder to concentrate with E-learning. I learn much better in the traditional classroom.
	Include Audio and Visual
	E-learning has helped me to study when I am most awake and feel that I will comprehend the most. I also like being able to review what I have learned and re-listen to lectures/look at slides, etc.
	I like accessing class info online. BB6 is a very helpful environment.
	Make one universal site for all of your classes instead of having courses on 2-3 websites.
	I love the Internet course, but wouldn't want all courses online. Summer courses would work.
	The use of laptops (ie. as some colleges use) for each student would make it easier.
	I don't think that learning nursing online would be as beneficial and effective as classes in-person.
	I would be interested in online classes for grad school.
	Nursing is very hands-on oriented.
	I am a visual learner. It helps me to have someone teach me rather than me reading it all for myself.

APPENDIX D

NATIONAL BEST PRACTICES IN E-LEARNING Implications for Iowa Health Occupations Education

EXECUTIVE SUMMARY

This report will share information about successful programs that may help in the development of a *Strategic Plan to Increase Access to Health Occupations Education in Iowa through the Use of E-learning*. E-learning is being utilized in many different formats across the nation. The utilization of technology in health occupations varies greatly across institutions. Some groups and states are forming collaborations for the purpose of improving access to health occupations education through the use of E-learning. The following is an analysis of some of these programs.

Strategies for consideration that use E-learning to enhance access to health occupations education (staff development and academia) and improve collaboration between health care delivery units and academia (colleges and universities):

- Statewide Simulation Consortia – The state of Oregon has developed a system whereby health care delivery units (HCDUs) and academic programs collaborate on the implementation and management of simulation technology. This type of simulation technology refers primarily to high fidelity human patient simulators (HPS). HPS technology is valuable because the learner experiences a very real health care interaction which may not be otherwise available or be too dangerous for active participation by a novice (see below). The Simulation Consortia in Oregon has secured state and federal dollars to create collaborative centers around the state. Both HCDUs and academic units have access to the centers. These stakeholders jointly oversee the simulation lab and can utilize it for training their students and staff. Funding for this type of venture could be sought from a variety of sources, including USDA Rural Development Distance Learning and Telemedicine Grant; Alfred P. Sloan Foundation; Center for Healthcare Workforce Planning/Iowa Department of Public Health; HRSA Grant (Distance Learning; Nursing; Continuing Education).
- Online Clinical Placement System – The availability of clinical space is a major issue in increasing the number of graduates from nursing programs. As enrollments increase, some HCDUs are being overwhelmed with requests for students in many areas. Other agencies are not being utilized adequately. One possible solution is an online reservation system that allows HCDUs to post available sites and specialties and schools to browse potential sites. While this concept is quite new and still being developed, it has the potential to maximize clinical experiences for students (see below). The recommendation would be to seek licensing options from one of the current pilot projects on the West Coast and implement the system in one geographical location in Iowa. This Iowa-based pilot should include both rural and urban HCDUs, and schools.

Data was acquired from participation in the 3rd Annual Meeting of State Nursing Workforce Centers and through dozens of contacts across the nation.

NATIONWIDE MODELS AND BEST PRACTICE

High Fidelity Human Patient Simulators – HPS technology includes computerized mannequins that can replicate a number of human functions, including vomiting, talking, breathing, pulses, pupil dilation, and dying. The value of simulation technology has been proven in its use by military and aircraft personnel for decades. The advantage of teaching airline pilots to manage a crisis (failed engine, loss of cabin pressure) in the safety of a simulator is evident. If pilots could learn to manage emergencies only through actual experience, flight would be a much riskier mode of transportation.

Now the health care industry is beginning to realize the value of high fidelity HPS. For health occupations education, the HPS can provide students and health care professionals access to very important clinical situations that may otherwise be inaccessible. Space for high quality clinical learning experiences is very limited across the nation. The HPS can provide students excellent opportunities to make clinical judgments and build critical thinking skills. Examples include how to manage a client who experiences shock, asthma attacks, trauma, birth, and a multitude of other situations. The HPS has also been shown to be a good tool to teach interdisciplinary collaboration during these critical situations. For more information on HPS, visit <http://www.meti.com/stan.html> or www.laerdal.com.

Online Tracking of Clinical Sites – Clinical placement of students presents challenges to both HCDUs and schools. With more students needing clinical experience, many HCDUs find themselves receiving more requests than they can process. Two organizations have taken this issue to the Internet by creating Websites to streamline clinical placement and increase awareness of potential needs.

As enrollments increase, it is important to identify all potential clinical sites for student experience in a collaborative milieu. These systems allow HCDUs and schools to view current site availability and program needs. The schools submit online requests for student clinical experiences. All available sites are analyzed, and requests are considered when possible. These Websites have eliminated the need for complicated meetings, and difficult scouting on the part of the schools, while assuring that existing agreements are honored.

For more information, visit:

The Oregon Center for Nursing at <http://www.ocnplacement.org/>
OR

The Centralized Clinical Placement System at
<http://ccps.foundationccc.org/ccps/public/home.htm>

Multi-State Nursing Education Center – The Southern Regional Education Board (SREB) is a collaborative of 16 southeastern states and the District of Columbia. The mission of the SREB is to improve education in that region of the country by collaborating at many different levels. One of their recent endeavors is the Nursing Education Center. Through the SREB's *Electronic Campus*, nursing graduate programs are able to offer online MSN courses to students at other member schools. It is anticipated that this pilot project will alleviate the shortage of nursing faculty that is limiting enrollments in nursing programs.

More information on this collaborative can be found at
<http://www.sreb.org/programs/Nursing/nurseeducators/nursingindex.asp>

GLOSSARY

ADN – Associate Degree Nurse

Asynchronous discussion – an online discussion where by the participants do not have to be present at the same time or place. Other names may include newsgroup, discussion board, threaded discussion, or bulletin board.

Blended – A course or program that is blended allows the student to meet part of the course requirements online and part in the classroom. In these courses, part of the student’s seat time is accounted for by online activities. Also called a hybrid format.

BSN – Bachelor of Science in Nursing

CNA – Certified Nursing Assistant

Continuing Education – Personal learning endeavors to meet licensing requirements for individual professionals. These requirements vary between professions and states.

Course Management System – A CMS is an online service that allows a school to offer educational programs. The CMS has a course room where a certain group of students (usually in one class) go to receive/submit class work, communicate with others in the class, and find out grades. In education, WebCT, Blackboard, eCollege, Angel and Quodata are commonly used. In practice NetLearning, Health Stream, and careLearning are common CMSs.

E-learning – The utilization of computer mediated communications for education. This type of learning may be combined with face-to-face learning, or other distance learning modalities, or it may be offered by itself as a form of distance learning. Other names may include Web-based learning or Online learning.

ED – Emergency Department

EMS – Emergency Medical System

Faculty-based clinical – Clinical is where HO students go to actual HCDUs and practice with real patients and clients. These clinicals are faculty-based when a faculty member is there with the students (usually 8) at the clinical site.

Health Care Delivery Unit (HCDU) – A facility, organization, or group that supplies health-related services to the community. This may include a long-term care facility, hospital, public health department, emergency medical service, etc.

HO – Health occupations

Hybrid – See blended.

IACN – Iowa Association of Colleges of Nursing

IBON – Iowa Board of Nursing

ICCNEA - Iowa Community Colleges Nursing Education Directors Association

ICCOC – Iowa Community College Online Consortium

ICON – Iowa Council of Nursing

IDPH – Iowa Department of Public Health

IHA – Iowa Hospital Association

IONL – Iowa Organization of Nurse Leaders

ISHET – Iowa Society for Health Care Education and Training

Mandatory training – Staff development training of personnel needed to meet regulatory guidelines.

MNHP – Masters in Nursing and Healthcare Practice, this degree is offered at the University of Iowa for individuals with a bachelor's degree who wish to enter nursing at the master's level. This degree does not meet necessary requirements to function as a faculty member in nursing as is the case with the MSN.

MSN – Master of Science in Nursing

OCPP – Online Communities of Professional Practice

Online Assistant Nurse Educator (OANE) – A practicing nurse that comes into the classroom via online discussions and email as an assistant to the permanent faculty.

Online Pedagogy – effective teaching in an online learning environment (Internet, intranet, email)

PN – Practical Nurse

RCSA – Rural Clinical Site Alliance – Partnership of rural HCDUs and HO education programs for the purpose of placing students in preceptorships in place of faculty-based clinical. E-learning is used to keep the students, preceptors, and faculty in close communication and to facilitate high level learning and critical thinking in the student.

Staff development training – Mandatory training of personnel necessary to meet regulatory guidelines.

Synchronous discussion – an online discussion where the participants can 'chat' online at the same time. They may do this over the Internet, and therefore, may be geographically removed from one another. Other names may include chat or relay chat. Some may also consider Instant Messaging a form of synchronous discussion.

Technical Competency – the skill to perform basic operations (logging-on, email, file attachment, online discussion) with computers and the Internet.

REFERENCES

- Ali, N. S., Hodson-Carlton, K., & Ryan, M. (2004). Students' perceptions of online learning: Implications for teaching. *Nurse Educator*, 29(3), 111-115.
- American Association of Colleges of Nursing. (2003). *Faculty shortages in baccalaureate and graduate nursing programs: Scope of the problem and strategies for expanding the supply*. Washington, DC: Author. Retrieved February 25, 2004, from <http://www.aacn.nche.edu/Publications/WhitePapers/TFFFWP.pdf>.
- American Association of Colleges of Nursing. (2003). *Thousands of students turned away from the nation's nursing schools despite sharp increase in enrollments*. Washington, DC: Author. Retrieved April 2, 2004, from <http://www.aacn.nche.edu/Media/NewsReleases/enr103.htm>.
- American Association of Colleges of Nursing. (2004). *Nursing faculty shortage fact sheet*. Washington, DC: Author. Retrieved May 22, 2004, from <http://www.aacn.nche.edu/Media/Backgrounders/facultyshortage.htm>.
- Armstrong, M. L., & Frueh, S. (2003). *Telecommunications for nurses: Providing successful distance education and telehealth* (2nd ed.). New York: Springer Publishing Company.
- Aucoin, J., & Armstrong, M. L. (2003). Faculty development: The cornerstone of distance education. In M. L. Armstrong & S. Frueh (Eds.), *Telecommunications for nurses: Providing successful distance education and telehealth*. New York: Springer Publishing Company.
- Batte, M. T., Forster, D. L., & Larson, D. W. (2003). An assessment of student acceptance and performance in distance education with two-way interactive compressed video. *Review of Agricultural Economics*, 25(2), 524-539.
- Baumlein, G. K. (2003). *Teaching strategies and student outcomes in Web-based instruction in nursing: A case study of expert nurse educators*. University of Akron, Akron, OH.
- Benbunan-Fich, R., & Hiltz, S. R. (2003). Mediators of the effectiveness of online courses. *Ieee Transactions on Professional Communication*, 46(4), 298-312.
- Billings, D. M. (2002). *Conversations in E-learning*. Pensacola, FL: Pohl Publishing.
- Billings, D. M. (2003). Online communities of professional practice. *Journal of Nursing Education*, 42(8), 335.
- Billings, D. M., & Halstead, J. A. (2005). *Teaching in nursing*. St. Louis, MO: Elsevier Saunders.
- Biviano, M., Fritz, M. S., Spencer, W., & Dall, T. M. (2004). *What is behind HRSA's projected supply, demand, and shortage of registered nurses?* Rockville, MD: Health Resources and Services Administration.
- Bristol, T. (2004). *Nursing faculty shortage: Evaluation and proposed solutions*. Milwaukee, WI: Author. Retrieved July 9, 2004, from <http://www.nursetim.com/Professional/Articles/NrsFacShrtg%20EvalSolutions.htm>.
- Brownson, K. (2005). Online degrees for nurses: A flexible alternative. *Journal for Nurses in Staff Development*, 21(1), 26-30.
- Bruya, M. A., Thiele, J. E., & Synoground, G. (2001). Use of a search model to enhance patient education in a clinical setting. *The Journal of Continuing Education in Nursing*, 32(4), 165.
- Buerhaus, P. I., Staiger, D. O., & Auerbach, D. I. (2000). Implications of an aging registered nurse workforce. *JAMA*, 283(22), 2948-2954.

- Buerhaus, P. I., Staiger, D. O., & Auerbach, D. I. (2003). Is the current shortage of hospital nurses ending? *Health Affairs*, 22(6), 191.
- Carney, D. M. (2005). Building bridges...and strengthening nursing. *Journal for Nurses in Staff Development*, 21(1), 1-5.
- Cobb, S. C. (2003). Comparison of oncology nurse and physician use of the internet for continuing education. *The Journal of Continuing Education in Nursing*, 34(4), 184.
- Conley, V. M. (2002). *Non-financial factors related to the retirement process of selected faculty groups*. Virginia Polytechnic Institute and State University, Blacksburg, VA.
- Conrad, K., & TrainingLinks (Firm). (2000). *Instructional design for Web-based training*. Amherst, Mass.: HRD Press.
- Conrad, R., & Donaldson, J. A. (2004). *Engaging the online learner: Activities and resources for creative instruction*. San Francisco, Ca: Jossey-Bass.
- Cuellar, N. (2002). The transition from classroom to online teaching. *Nursing Forum*, 37(3), 5-13.
- Dickerson, S. S., Boehmke, M., Ogle, C., & Brown, J. K. (2005). Out of necessity: Oncology nurses' experiences integrating the Internet into practice. *Oncology Nursing Forum*, 32(2), 355-362.
- Dutton, J., Dutton, M., & Perry, J. (2002). How do online students differ from lecture students? *Journal of Asynchronous Learning Networks*, 6(1), 1-20. Retrieved April 21, 2004 from <http://www.aln.org/publications/jaln/v2006n2001/index.asp>.
- Edwards, N., & Lockett, D. (2004). The prohibitive costs of accessing evidence online. *The Journal of Continuing Education in Nursing*, 35(2), 89.
- Federal Communications Commission. (2004). *New figures show broadband deployment accelerating in the U.S.* Washington, DC: Author. Retrieved April 2, 2005, from http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-251959A1.pdf.
- Fredericksen, E., Pickett, A., Shea, P., Pelz, W., & Swan, K. (2000). Factors influencing faculty satisfaction with asynchronous teaching and learning in the SUNY learning network. *Journal of Asynchronous Learning Networks*, 4(3), Retrieved Feb 2, 2004, from <http://www.aln.org/publications/jaln/index.asp>.
- Fredericksen, E., Pickett, A., Shea, P., Pelz, W., & Swan, K. (2000). Student satisfaction and perceived learning with on-line courses: Principles and examples from the SUNY learning network. *Journal of Asynchronous Learning Networks*, 4(2), 7-41.
- Gibbons, H., & Wentworth, P. (2001). Andrological and pedagogical training differences for online instructors. *Online Journal of Distance Learning Administration*, 4(3), Retrieved April 6, 2004, from http://www.westga.edu/~distance/ojdla/fall2043/gibbons_wentworth2043.html.
- Gold, S. (2001). A constructivist approach to online training for online teachers. *Journal of Asynchronous Learning Networks*, 5(1), 35-57. Retrieved April 31, 2004 from <http://www.aln.org/publications/jaln/v2005n2001/index.asp>.
- Haas, B. K., Deardorff, K. U., & Klotz, L. (2002). Creating a Collaborative Partnership Between Academia and Service. *Journal of Nursing Education [H.W. Wilson - EDUC]*, 41(12), 518-523.

- Iowa Community College On-line Consortium. (2004). *ICCOC pre-course survey for Fall 2004: Survey summary detailed report with write-in responses multi-course report*. Muscatine, IA: ICCOC. Retrieved October 22, 2004, from <http://www.iowacconline.org/Administrative/survey/G%20Pre-Course%20-%20Fall%202004.pdf>.
- Iowa Department of Public Health. (2000). *Healthy Iowans 2010*. Des Moines, IA: Author. Retrieved July 7, 2004, from http://www.idph.state.ia.us/bhpl/healthy_iowans_2010.asp.
- Iowa Department of Public Health. (2003). *White paper on registered nurse supply and demand: A call to action*. Des Moines, IA: Author.
- Iowa Department of Public Health. (2004). *2004 survey of Iowa's nursing faculty and nursing education programs*. Des Moines, IA: Author.
- Iowa Department of Public Health. (2004). *Nursing educators in Iowa speak out: A call to action*. Des Moines, IA: Author.
- Iowa Hospital Association. (2004). *IHA 2003 health professional workforce survey*. Des Moines, IA: Author. Retrieved Sept. 1, 2004 from <http://www.ihaonline.org/publications/2004%20Wrk%20Frc%20work%20force%20report.pdf>.
- Kearns, L. E., Shoaf, J. R., & Summey, M. B. (2004). Performance and satisfaction of second-degree BSN students in Web-based and traditional course delivery environments. *Journal of Nursing Education, 43*(6), 280.
- Kellar, S., Jones, W., & Hoover, K. (2003). *Nursing education barriers identification survey*. Jackson, MS: Office of Nursing Workforce. Retrieved October 20, 2004, from http://www.mississippi.org/jobs_training/NursingBarriers.pdf.
- Khan, B. H. (2001). *Web-based training*. Englewood Cliffs, NJ: Educational Technology Publications.
- Knowles, M. S., Holton, E. F., & Swanson, R. A. (Eds.). (1998). *The adult learner: The definitive classic in adult education and human resource development* (5th ed.). Woburn, MA: Butterworth-Heinemann.
- Ko, S. S., & Rossen, S. (2001). *Teaching online: A practical guide*. Boston: Houghton Mifflin.
- Lacy, E. (2005, January 26). Dearborn schools enlist online tutors. *The Detroit News*, Retrieved March 5, 2005, from <http://www.detnews.com/2005/schools/0501/2028/B2001-70660.htm>.
- Lake, D. (2001). Student performance and perceptions of a lecture-based course compared with the same course utilizing group discussion. *Physical Therapy, 81*(3), 896-902.
- Leppa, C. J. (2004). Assessing student critical thinking through online discussions. *Nurse Educator, 29*(4), 156.
- Marsden, A.-M. (2003). Online Education: New rules, New rewards. *Journal of Family and Consumer Sciences, 95*(4), 8.
- McCannon, M., & O'Neal, P. V. (2003). Results of a national survey indicating information technology skills needed by nurses at time of entry into the work force. *Journal of Nursing Education, 42*(8), 337.
- Miller, J., Shaw-Kokot, J., Arnold, M., & Boggin, T. (2005). A study of personal digital assistants to enhance undergraduate clinical nursing education. *Journal of Nursing Education, 44*(1), 19-27.

- Minnesota Department of Health. (2002). *Minnesota Nursing Student Profile*. Retrieved May 10, 2004, from <http://www.health.state.mn.us/divs/chs/rhpc/PDFdocs/Nursingstudentprofile.pdf>
- Montgomery, K. S., & Fitzpatrick, J. J. (2002). *Essentials of Internet use in nursing*. New York: Springer Publishing Company.
- Moore, M., & Kerarsley, G. (1996). *Distance education: A systems view*. CA: Wadsworth Publishing Company.
- National Council of State Boards of Nursing. (2004). *NCLEX® examination pass rates*. Chicago: Author. Retrieved May 21, 2004, from <http://www.ncsbn.org/regulation/epls.asp>.
- National League for Nursing. (2002). *Position statement: The preparation of nurse educators*. New York: Author. Retrieved May 21, 2004, from <http://www.nln.org/aboutnln/PositionStatements/prepofnursed02.htm>.
- O'Neil, C. A., Fisher, C. A., & Newbold, S. (2004). *Developing an online course: Best practices for nurse educators*. New York: Springer Publishing Company, Inc.
- Oregon Center for Nursing. (2003). *Agenda: Oregon workforce investment board*. Salem, OR: Author. Retrieved May 27, 2004, from <http://www.workforce.state.or.us/noframes/owib/meetings/agendas/DecemberAgenda.pdf>
- Palloff, R. M., & Pratt, K. (1999). *Building learning communities in cyberspace : effective strategies for the online classroom*. San Francisco: Jossey-Bass Publishers.
- Palloff, R. M., & Pratt, K. (2001). *Lessons from the cyberspace classroom : the realities of online teaching*. San Francisco: Jossey-Bass.
- Palloff, R. M., & Pratt, K. (2003). *The virtual student : A profile and guide to working with online learners* (1st ed.). San Francisco: Jossey-Bass.
- Poore, E. E. (2004). *A comparison of knowledge retention of computer-based training under varied environments*. Capella University.
- Rassin, M., Gutman, Y., & Silner, D. (2004). Developing a computer game to prepare children for surgery. *Association of Operating Room Nurses. AORN Journal*, 80(6), 1095.
- Reigeluth, C. M. (1999). *Instructional-design theories and models*. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Reigeluth, C. M., & Moore, J. (1999). Cognitive education and the cognitive domain. In C. M. Reigeluth (Ed.), *Instructional-design theories and models: A new paradigm of instructional theory* (Vol. 2, pp. 51-68). Mahwah, NJ: Lawrence Erlbaum Associates.
- Rice, R. B. (2003). Collaboration as a tool for resolving the nursing shortage. *Journal of Nursing Education*, 42(4), 147-148.
- Rick, C., Kearns, M., & Thompson, N. (2003). The reality of virtual learning for nurses in the largest integrated health care system in the nation. *Nursing Administration Quarterly*, 27(1), 41.
- Rideout, E. (2001). *Transforming nursing education through problem-based learning*. Boston: Jones and Bartlett publishers.
- Rosenberg, M. J. (2001). *E-learning: Strategies for delivering knowledge in the digital age*. New York: McGraw-Hill.
- Rouse, K. (2004, November 6). Online ed puts schools in a bind: Districts lose students, funding. *The Denver Post*, Retrieved December 2, 2004, from <http://www.denverpost.com/Stories/0,1413,36%257E25%257E,00.html>.

- Schmitt, M. B. (2004). Challenges of Web-based education in educating nurses about evidence-based acute pain management practices for older adults. *The Journal of Continuing Education in Nursing*, 35(3), 121.
- Schworm, P. (2004, September 16). At high schools, more students logging on to learn. *The Boston Globe*. Retrieved October 4, 2004, from http://www.boston.com/news/education/k_12/articles/2004/09/16/at_high_schools_more_students_logging_on_to_learn/.
- Shea, P. J., Pelz, W., Fredericksen, E. E., & Pickett, A. M. (2001). *Online teaching as a catalyst for classroom-based instructional transformation*. Albany, NY: State University of New York. Retrieved July 23, 2004, from <http://tlt.suny.edu/Research/Faculty01.doc>.
- Southern Regional Education Board. (2002). *2002 SREB survey highlights - distribution of responses by state*. Atlanta: Author. Retrieved May 20, 2004 http://www.sreb.org/programs/nursing/publications/2002survey/NursingSurvey_2002_Data.html.
- Southern Regional Education Board. (2003). *Reports from the Council on Collegiate Education for Nursing*: Author. Retrieved May 21, 2004, from <http://www.sreb.org/programs/nursing/presentations/presentationsindex.asp>.
- Staiger, D. O., Auerbach, D. I., & Buerhaus, P. I. (2000). Expanding career opportunities for women and the declining interest in nursing as a career. *Nursing Economics*, 18(5), 230-236.
- Suter, M. C. (2001). *College faculty's transition to online teaching: From classroom space to virtual place*. Capella University, Minneapolis.
- Teitler, J. O., Reichman, N. E., & Sprachman, S. (2003). Costs and benefits of improving response rates for a hard-to-reach population. *Public Opinion Quarterly*, 67(1), 126.
- U.S. Department of Education. (2005). *Toward a new golden age in American education: How the Internet, the law and today's students are revolutionizing expectations: National education technology plan 2004*. Jessup, Md: Author. Retrieved January 12, 2005, from http://www.nationaledtechplan.org/docs_and_pdf/National_Education_Technology_Plan_2004.pdf.
- Walker, B. L., & Harrington, S. S. (2004). The effects of computer-based training on immediate and residual learning of nursing facility staff. *The Journal of Continuing Education in Nursing*, 35(4), 154.

FEEDBACK PLEASE

The Center for Health Workforce Planning values and invites the input of health professionals in practice and education, and the public. Any input you may have related to this strategic plan is appreciated. Comments may be directed to Eileen Gloor at egloor@idph.state.ia.us or the consultant, Tim Bristol, at tim@nursetim.com.

Input

Contact Information - Comments may be directed to:

Eileen Gloor, MSN, RN
Center for Health Workforce Planning
Iowa Department of Public Health
321 East 12th Street
4th Floor Lucas Building
Des Moines, IA 50319
Tel. 515.281.8309
Fax 515.242.6384
Email egloor@idph.state.ia.us
http://www.idph.state.ia.us/hpcdp/workforce_planning.asp

Tim J. Bristol, MSN, RN
NurseTim.com
8328 N. 95th St
Milwaukee, WI 53224
Tel. 414.331.3334
Fax 866.861.2896
Email tim@nursetim.com
<http://nursetim.com/>