Implementing a Practice Doctorate Program at a Distance through an Urban-Rural Partnership

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ABSTRACT:

The purposes of this poster presentation are to 1) describe the implementation of a doctor of nursing practice (DNP) program by providing access to rigorous distance education to students living in rural Pennsylvania; 2) discuss building a critical mass of doctorally prepared advanced practice nurse experts in both urban and rural communities; and 3) share formative and summative evaluation information.

Through funding from the U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing, the Jefferson School of Nursing (JSN) expanded its DNP program currently offered at the urban Philadelphia campus to the rural campus in Danville. Using the methodologies of live web-casting and live video over the Internet, distance students are afforded the opportunity to participate in a live classroom setting rather than experience the static distance methodology of reading through lectures themselves. For example, during the applied biostatistics course, the faculty teaches onsite in Philadelphia projecting the SPSS and the database on screen so that students on both campuses can simultaneously view, hear, and interact with the discussion. There is a doctorally prepared faculty member onsite in Danville as a resource for the students. These newer technologies make possible real-time faculty-student dialogue, student-to-student dialogue, and enhance socialization. Furthermore, the use of advanced technologies allows distance students to discuss with peers and faculty alike, in real time, the problems, successes, and questions which arise during class and clinical practica, thereby enhancing critical thinking and diagnostic reasoning skills.

This unique urban-rural partnership, made possible through advanced technologies, addresses increasing demands for educating greater numbers of doctorally prepared advanced practice nurses to work in north and central rural Pennsylvania, thus promoting access to health care in rural underserved communities. Other than in academia, there are no doctorally prepared advanced practice nurses employed in practice in the area.

INTRODUCTION:

Through support from the Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing, the Jefferson School of Nursing (JSN) has expanded its Doctor of Nursing (DNP) programs, currently offered at the urban Center City Campus, to the rural Danville Campus. Expansion of the program has increased the clinical learning experience sites for enrollees and the number and distribution (race/ethnicity, age, gender) of doctoral prepared nurses employed and practicing in rural and underserved areas. This project uses a multidimensional approach that focuses on: 1) implementation, 2) recruitment and retention, 3) academic and non-academic support services, 4) diversity and rural/cultural competence, and 5) post-graduation employment of doctorally prepared nurses in north and central Pennsylvania. This advanced education nursing program will: 1) position JSN as a recognized resource for doctoral nursing education in the north and central portions of Pennsylvania; 2) implement outcome measures used to evaluate recruitment, retention, and graduation rates of a diverse and culturally and rurally competent nursing workforce; 3) develop retention strategies for racial and ethnically diverse and disadvantaged nursing students; and 4) insure a supply of doctorally prepared nurses to offset the advanced practice nurse shortage in Pennsylvania. This approach supports the following project goals: 1) increasing the number and diversity of applications and admissions to the DNP program, with particular emphasis on recruiting disadvantaged and minority candidates from rural communities; 2) building a critical mass of nursing experts in both urban and rural communities by implementing a doctor of nursing practice (DNP) program that focuses on educating clinical leaders who specialize in evidence-based practice and organizational change; 3) increasing the number of rural sites and preceptors for clinical practice with underserved and minority populations; and 4) increasing educational experiences aimed toward improving minority and underserved populations' access to care from a diverse and culturally competent nurse workforce (National Goals I, II; BHPr Goals, 1,2,3,4).

NEEDS ASSESSMENT & RATIONALE:

Target Population

Pennsylvania is the nation's 6th largest state with a population of more than 12.5 million people. Many of those 12.5 million people are concentrated in Pennsylvania's major population centers, Philadelphia in the southeast corner of the state and Pittsburgh in the southwest. Pennsylvania also contains a number of medium-sized cities such as Scranton and Wilkes-Barre in the northeast, Allentown in the east central, Erie in the northwest, and the cities of Harrisburg, York, and Lancaster in the south-central part of the state. Central Pennsylvania is home to a substantial rural population, approximately 3.4 million residents, which gives Pennsylvania the **largest rural population of any state** in the nation. Of the 67 counties in Pennsylvania, 48 are rural. Of the 22 counties targeted for this grant 19 are rural: Cameron, Clearfield, Clinton, Columbia, Forest, Huntingdon, Jefferson, Lycoming, McKean, Mifflin, Monroe, Montour, Northumberland, Pike, Potter, Schuykill, Sullivan,Tioga, and Union and three (3) are considered urban: Berks, Dauphin, and Lehigh. According to the 2000 Census, 85.4% of the state's population is white, 10.0% is Black/African-American, 3.2% is of Hispanic/Latino origin, 2,2% is Asian, and 0.2 is American Indian/Alaskan native. Nine of the counties targeted for this proposal have a Black/African American population between 5% and 17.8%, Dauphin (17.8%) and Monroe (10.6%) are above the state's Black/African American population. Six of the counties targeted for this proposal have a Hispanic/Latino origin population greater than the state's: Berks (12.4%), Dauphin (5%), Lehigh (13.8%), Monroe (10.4%), Pike (6.7%), and Union (4.1%). Census numbers report that between 2000 and 2004, rural Pennsylvania gained 35,900 new residents; **Hispanics comprised nearly 40 percent** of this increase. Many of these Hispanics are moving into areas that have experienced population loss for many decades.The state's Black/African American population grew by 19.4%, the Asian population grew by 77%, and the Hispanic population grew by 104.7% between 1990 and 2004 (The Center for Rural Pennsylvania, 2006; United States Census Bureau, 2002).

Poverty is also more prevalent in rural areas. Overall, Pennsylvania has a poverty rate of 10.6%. Thirteen of the 22 counties targeted for this proposal have a poverty rate greater than 12%. In addition, nearly 12 percent of Pennsylvania's rural population had incomes below the poverty level in 1999. At the municipal level, 32 rural and small towns in Pennsylvania have poverty rates above that of Philadelphia's 23 percent poverty rate. Nearly 30 percent of rural adults lack a high school diploma, and about 10 percent have a college degree or higher. In urban areas, the figure is 25 percent. Moreover, with a more comprehensive network of community colleges and universities, more than 22 percent of urban adults have an associate's degree or some type of college experience. In rural areas, just 19 percent do.

A review of the Centers for Disease Control and Prevention's (CDC) Health Status Indicators showed several areas with statistically significant differences between urban and rural areas.The death rate per 100,000 population due to heart disease, cerebrovascular disease, motor vehicle crashes, suicide, and work-related injuries is higher in rural areas. Based on an analysis of responses to questions asked in the Pennsylvania Department of Health's Behavioral Risk Factor Surveillance System (BRFSS), disparities between rural and urban health status are evident. Analysis of behavioral survey data suggests that rural residents are less healthy than their urban counterparts. According to the BRFSS surveys, fewer rural residents regularly exercise, a third are overweight, and nearly 60% are at risk for having a sedentary lifestyle. In general, the results show that **rural adults are in poor physical condition** and have more health related problems (Pennsylvania Department of Health, 2006).

Health Disparities and National Health 2010 Targets

In 2003-2004, of the 12.5 million residents in Pennsylvania, 1.5 million were without health insurance. Since 1990, the rate of **uninsured** persons increased from 7.7% to 11.9%. Black/African Americans are more likely to be uninsured than white, non-Hispanic residents, with 14% of Black/African Americans having no health insurance, compared with 7% white residents, 9% Hispanic residents, 9% Asian residents, and 10% American Indian/Alaskan natives (Pennsylvania Insurance Department, 2005). There are a number of areas of **health disparities** that are of concern to health professionals. The national health objective for 2010 targets a rate of 4.5 infant deaths per 1,000 live births (Pennsylvania Department of Health, 2006). In Pennsylvania, only infants of Asian/Pacific Islander mothers have reached this target. In rural Pennsylvania counties, the **infant death** rate continues to be higher than the overall state rate of 7.1 infant deaths per 1000 live births. For example, in 9 of the counties targeted for this proposal the infant death rate ranges between 9 and 27 infant deaths per 1000 live births (The Center for Rural Pennsylvania 2005). The national health objective for 2010 targets a rate of 45 **diabetes** deaths per 100,000, 166 **coronary heart disease** deaths rate per 100,000, and 48 **stroke** deaths per 100,000 (Pennsylvania Department of Health). In 20 of the 22 counties targeted for this grant, the diabetes death rate ranges between 66 and 130 diabetes deaths per 100,000. In 16 of the 22 counties targeted for this proposal, the coronary heart disease death rate ranges between 170 and 248 coronary heart disease deaths per 100,000. In 14 of the 22 counties targeted for this grant, the stroke death rate ranges between 51 and 67 stroke deaths per 100,000 (Pennsylvania Department of Health, 2006).

Health Disparities and Chronic Diseases

Health disparities also exist for chronic diseases such as heart disease, hypertension, stroke, and diabetes. In Pennsylvania, African Americans constitute about 10% of the state's population. Heart disease is the leading cause of death among African Americans in the state. The heart disease death rate for African Americans in Pennsylvania is 298.5 per 100,000; the rate for their white counterparts is 255.1 per 100,000. According to CDC's 2003 BRFSS data, African Americans also had higher prevalence rates for high blood pressure than whites or Hispanics in the state (33.1% of African Americans in Pennsylvania reported having been told they had high blood pressure versus 26.1% of whites and 24.2% of Hispanics). In Pennsylvania, from 1991 to 1998, the stroke death rate for African Americans was 74.7 per 100,000, compared with the rate for whites, 54 per 100,000. Approximately 14% of African Americans in Pennsylvania were diagnosed with diabetes in 2003, in comparison to 7.6% of whites. The diabetes death rate in 2002 for African Americans in the state (42.0 per 100,000) was also significantly higher than the rate for whites (24.5 per 100,000). Data from the 2003 BRFSS also indicate that in Pennsylvania, the rate of overweight and obesity was highest among African Americans (76.4%). The rate of obesity (based on body mass index) for African Americans was 35.1%, compared with the rate for whites, 23.1%. The rate of obesity among African Americans in Pennsylvania also was higher than the rate of obesity among African Americans in the United States (32.6%). African Americans in Pennsylvania were less likely to participate in regular leisure time physical activity (71.7%) than whites (78.6%). African Americans (35.4%) and Hispanics (33.4%) are more likely to be smokers than whites (23.9%) (Centers for Disease Control and Prevention, 2006).

Nursing Workforce

Pennsylvania is the third largest employer of non-physician providers and the majority of these individuals work in primary care.Traditionally, they also are more likely than physicians to work in rural and other underserved areas. There is a critical shortage of advanced practice nurses nationally and in the state of Pennsylvania. In 2005, the highest vacancy rate in Pennsylvania's health care workforce existed for advanced practice nurses (APNs) at 14.7%, this is increased from the 2003 vacancy rate of 11.6%. The **APN vacancy rate** in north and central Pennsylvania were 15.1% and 17.6% respectively. In addition, the percent change in vacant positions was 76.2% (The Hospital and Healthsystem Association of Pennsylvania, 2006). APNs working in primary care settings provide a majority of personal health care needs by integrating physical, mental, emotional, social, and health promotion and disease prevention. Traditionally, primary care provides initial access to the health care delivery system. Access to **primary health care is limited in many rural areas**. Although Pennsylvania, anchored by Pittsburgh and Philadelphia, has the largest rural population in the nation and the second highest percentage of elderly residents, its health care providers are clustered in its major cities. In 1999, rural Pennsylvania had roughly one physician for every 619 residents, as compared to one for every 260 residents in urban areas. Forty-three percent of its primary care physicians are located in just 3 of its 67 counties, which contain only 30% of its population, while almost two-thirds of its counties have areas designated, or under consideration for designation, as **medically underserved areas (MUAs)** and **health professional shortage areas (HPSAs)**.Twenty of the 22 counties targeted for this proposal are MUA and/or HPSA designated (Bureau of Health Professions, 2006).

The nurse population in Pennsylvania does not reflect the demographic makeup of the state: 1) white, 94.8% versus 85.4%, 2) Black/African American, 2.9% versus 10%, 3) Hispanic, 0.72% versus 3.2 %, 4) Asian, 1.6% versus 2.2%. These data reflect a significant under representation of minorities in the nursing workforce of Pennsylvania and do not approach reflecting Pennsylvania's diverse population as a whole. Nurses employed in health care in Pennsylvania received nursing education in the following educational settings: 1) bachelor's degree programs, 33.3%; 2) hospital-based programs, 33.2%;3) associate's degree programs, 22.1%; 4) master's degree programs, 10.7%; 5) doctoral degree programs, 0.6% (Health Professions Study Group, 2004). Urban counties (8.14%) have higher rates of RNs employed in health care per 1,000 population compared to the rural counties (5.58%) in Pennsylvania and 84.5% of RNs employed in health care in Pennsylvania worked in urban counties (Health Professions Study Group, 2004).

The proposed project addresses increasing demands for educating greater numbers of advanced practice nurses, including MSN and DNP, to work in north and central rural Pennsylvania. Other than in academia, there are no doctorally prepared nurses employed in practice in the area. By providing graduate nursing education to residents in the 22 counties targeted in this project, the number of APNs employed in rural Pennsylvania will be increased thus promoting access to health care in rural underserved communities. One statistic that supports this goal is that more people work where they reside. In the state of Pennsylvania, 72.4% of people work where they reside, however, in 12 of the 22 counties targeted in this proposal between 75% and 90% of residents work where they reside, thus negating the "brain drain" (The Center for Rural Pennsylvania, 2005). Once educated in their rural communities, more highly educated and trained APNs would remain in rural communities as valuable resources. Two JSN rural campus faculty are completing post-master's certificates, one as a family NP and one as an adult NP. The faculty completing the family NP has applied to JSN's DNP program.

Although JSN's urban campus graduates approximately 60 to 90 master's-prepared nurses each year, in order to meet the demand for educating greater numbers of rural APNs, the proposed expansion to JSN's rural campus is designed to address the current and anticipated health needs of rural Pennsylvanians living in north and central counties. The program will build on the strong relationship between JSN's urban and rural campuses, as well as relationships with hospitals, healthcare systems and retail stores in north and central Pennsylvania.

One of the goals of the project is to increase the number and diversity of applications and admissions to existing master's of science programs including adult NP, family NP, and neonatal NP programs, with particular emphasis on recruiting disadvantaged and minority candidates from rural communities. Based on the target population of the 22 counties described above, a minority and underserved student pool exists in rural Pennsylvania. Consistent with the state statistics, 33% of RNs employed in the 22 counties targeted in the proposal have a BSN and are potentially qualified to enter the program.

Barriers

Disparities in educational status, employment, and income may require the development of specialized approaches to nursing education and health improvement in rural Pennsylvania. Barriers can be overcome by improving recruitment and retention efforts, encouraging greater use of advanced practice nurses, and establishing new clinical learning sites in rural, underserved areas.This project emphasizes removing barriers which limit access to advanced nursing degree education and responds to changing enrollment demands by offering graduate nursing education online and onsite during nontraditional hours.This proposal will recruit and retain diverse and disadvantaged students to the MSN and DNP programs and insure a supply of master's and doctoral prepared nurses to offset the advanced practice nurse shortage and primary care provider shortage in rural Pennsylvania. Graduates from JSN's rural campus will be positioned to deliver quality, cost-effective, appropriate, and culturally competent care to underserved, vulnerable rural populations identified as high risk in national Healthy People 2010 objectives.

WORKPLAN / METHODOLOGY

Project Objectives

The three year objectives for Promoting Health Access: Online Graduate Programs for Rural Underserved Communities are congruent with the strategic plan as follows:

1. Increase the number and diversity of applications and admissions to the Doctor of Nursing Practice (DNP) program with particular emphasis on recruiting disadvantaged and minority candidates from rural communities. **(National Goal I, BHPr Goals 1 and 2)**

2. Build a critical mass of nursing experts in both rural and urban communities by implementing a doctor of nursing practice (DNP) program that focuses on educating clinical leaders who specialize in evidence-based practice and organizational change **(National Goal I, BHPr Goals 3 and 4)**

3. Increase the number of rural sites and preceptors for clinical practice with underserved and minority populations. **(National Goals I and II, BHPr Goals 2 and 3)**

4. Increase educational experiences aimed toward improving minority and underserved populations' access to care from a diverse and culturally competent nurse workforce. **(National Goal II, BHPr Goals 2 and 3)**

ELECTRONIC DISTANCE LEARNING METHODOLOGIES

Overview

Distance education will consist of synchronous and asynchronous technologies for teaching and learning. Thomas Jefferson University (TJU) uses the banner web-based registration system and when students register for online/distance courses, faculty are able to communicate with the student via e-mail about log on times, dates to start, where the distance learning website is located, and any extra meeting dates that may be required, or tutoring sessions offered in the classroom or online. In addition, there is an excellent **technical support** service that sets up each course at the beginning of the semester, updates course calendars, and assist students and faculty with any problems. The ability to use and understand technology is assessed at the beginning of every online/distance education course, assessment of home computer equipment, ability to utilize e-mail, Microsoft word processing skills and power point, use of the Internet, and ability to trouble shoot technical difficulties. Technical support is available 24 hours/day, 7 days/week. Jeff IT provides **desktop computer assistance** to all academic and administrative offices. They maintain servers, printers, and computers within the TJU system. AISR provides primary services including network and server infrastructure planning and management, help desk support for advice, questions, trouble shooting, and problem resolution. Curriculum management will be through TJU's curriculum system operating with Blackboard technology. TJU JSN's urban campus has offered asynchronous online courses via Blackboard methodologies since 1998 (**experience**).

DNP Program

This project has afforded JSN the opportunity to offer the DNP program on both the urban and rural campuses. Currently, there are 14 DNP students based at the urban campus and 4 DNP students based on the rural campus. For the DNP, 21 credits will be **available online (synchronously and asynchronously)** and 15 credits are being offered **live interactive webcasting and video live over the Internet.**

The first course in the DNP sequence, Applied Biostatistics, is offered live, meets over 15-weeks, and originates from the urban Philadelphia campus. The class is provided to the JSN rural campus real time via live video over the Internet. Because of the nature of the course objectives and content, each student requires a computer with access to SPSS and databases available from the Philadelphia Health Management Corporation (PHMC). Therefore, urban and rural students are sitting in the learning resource center on each campus, each with their own computer. The faculty member is teaching the course on JSN's urban campus and a faculty member is co-teaching the course on JSN's rural campus. Both locations have faculty support. In addition, technical personnel on both campuses attend every class and provide support for the full session. Each class is recorded live and available via a link on the course blackboard for all students should they want to review the class. Depending on the class, there may be one or two people present at all times. The Applied Biostatistics course presented several operational challenges: 1) being able to view and transmit the SPSS screens, 2) being able to view and transmit the PHMC data files, and 3) view the power point slides – all simultaneously to support student learning. The onsite/in-class technical support services have been critical to the success of this course. .

The second course in the DNP sequence, Organizational Change, is offered live, meets in person 6 times, and originates from the urban Philadelphia campus. The class is provided to the JSN rural campus real time via live video over the Internet. Because of the nature of the course objectives and content, this class is interactive and requires group activities and case studies. The faculty member is teaching the course on JSN's urban campus and a faculty member is co-teaching the course on JSN's rural campus. Both locations have faculty support. In addition, technical personnel on both campuses attend every class and provide support for the full session. Each class is recorded live and available via a link on the course blackboard for all students should they want to review the class. Depending on the class, there may be one or two people present at all times. The Organizational Change course presented several operational challenges: 1) being able to implement group activities, 2) being able to transmit necessary course materials in advance of class, and 3) power point slides – all simultaneously to support student learning. The onsite/in-class technical support services have been critical to the success of this course.

The remaining DNP courses will be offered online, synchronously and asynchronously, via live interactive webcasting and video live over the Internet. Each course is supported by the AISR and Medical Media Services teams.

In addition, each graduate nursing course has an "Ask the Librarian" option for instant messaging and e-mailing questions to reference librarians with a less than 24 hour turn-around time. The utilization of online learning has allowed full-time nurses to advance their education while meeting the many other responsibilities of their professional and personal lives.

PRELIMINARY FORMATIVE & SUMMATIVE EVALUATION

Preliminary formative and summative course evaluation revealed high student and faculty satisfaction. At the beginning of the semester, mid-term, and end of the semester, faculty requested that students provide formative and summative evaluation.

Students on the urban campus were asked to respond to the following open-ended questions:

1. Did the webcasting equipment effect your classroom experience? If so, how?
2. Did you feel any connection with the remote group or did you forget that they were there?

Students on the rural campus were asked to respond to the following questions:

1. Was it easy to connect to the webcast course?
2. Did you experience any technical problems during the webcast course? If so, please describe what problem(s) you encountered.
3. If you did have technical difficulty was the support technician able to help you solve the problem?
4. Were you able to understand the instructor?
5. Were you able to follow along with the material presented by the instructor?
6. If you asked any questions during the session were they accurately presented to the instructor on your behalf?
7. Was the webcast an effective alternative to the classroom experience?
8. Describe what you liked/disliked or would do differently regarding the webcast course.

Selected student feedback and evaluation is listed below for one of the DNP courses, NU702: Applied Biostatistics.

Beginning of Semester

Comments from Students on the Urban Campus:

"The webcasting did not negatively affect my learning in the Biostats class but I also did not feel a connection with the other class."

"I think the webcasting went well. This is my first experience with it. I did feel connected to the remote class members but of course it would have been nice to see them. Especially, during the introductions - to put a face with a name. Nevertheless, I think this is a wonderful way to use technology. "

"My comments about the technology in the room last week was that it seemed distracting to Gary, however, it was not really noticeable to me as a student until the end of class when the web connection was lost and Gary stopped teaching while Patrick tried to attain connection again. I did not, however, feel any connection with the crew in Geisinger."

"The webcasting equipment did not affect my classroom experience other than I thought it was a neat thing to do. When the group at Geisinger asked questions, I remembered they were there and I felt the class was somewhat interactive at these times. At other times, I forgot the group was there, because I couldn't see them."

"No I can't say that I felt connected to the other group because we could not see or hear them. However, several of us have already bonded in our group I would expect that would happen to them as well, and once we can see and hear them I think all will be different. The Instructor was very effective and decreased our anxiety level significantly with his style, although you could see he was somewhat uncomfortable with the camera as a first time experience. So felt the classroom environment was effective and had the same kinks that happen on the very first night of a course."

"The first few minutes were a bit distracting (maybe a cordless microphone would draw less attention as Dr. Klein had to constantly move around it) but after twenty minutes or so it is kind of lost in the background. Being able to have two way visual and audio would be helpful."

"Webcasting is a new experience for many of us. I feel that during the first session of this class, the instructor appeared to lose focus at times, and may have been thrown off by the use of cameras, microphone, and computer to communicate with the remote group. As we were limited to the typed communications by our other classmates, it was hard to remember they were there. When they did type something, the pace of the class slowed momentarily. Once the projector was turned off, only the instructor knew when/if the other class was sending a message."

"The camera seemed to be the focus point rather than the instructor, due to it's placement at front and center of the room. Also, Gary seemed uncomfortable in front of the camera, and looked like he was going to trip over the microphone wire several times. Overall, it did not affect my classroom experience all that much. Had no connection to the Geisinger folks other than on instant messaging."

Comments from Students on the Rural Campus:

"I think overall the webcast went OK. Dr. Klein does speak rather fast but I think we were able to follow. Two points that I would make: 1) the audio came across sort of "tinny" Not sure if anything can be done to improve that; and 2) video transmission was a little "disjointed", i.e., there would be brief pauses in the video/audio. I don't think we missed any information but it was a little distracting…yes, we were able to understand him for the most part, and Lori filled in what we missed."

"I am ok with the webcast. Dr. Klein does talk too fast at times. Between the five of us we can usually figure him out. Dr. Lauver is GREAT to have in the room. She is right on the spot to help, clarify, etc. The blackboard is a little difficult to see over the web.

"I liked the webcast…thought it worked fine. We had good technical support here. The instructor did well with adapting to the microphone and being taped. We were able to talk to instructor in writing and that was fine."

"This certainly was different than the typical in-class lecture I have been accustomed to. I found it difficult to hear the professor at times--therefore, he was hard to follow. However, we did have discussion periodically about his lecture and this shed light on things. I am not crazy about the little tiny box in the corner of the computer, but I understand the technology will be much better in a few weeks. I think Dr. Klein understands we are miles apart and there may be some difficulties, but we will get through this. I enjoyed the first class and am looking forward to the remainder of the semester. I am hoping we get the handouts the Philly students are getting."

End of Semester

Comments from Students on the Urban Campus:

"The webcasting equipment did not really affect my classroom experience negatively. Once I got used to it being there it was no big deal. I did think it rather exciting to be simulcasting with Geisinger but we really didn't know they were present until the last day when we had video of them giving their presentations…I loved being able to go back on line and review the recorded class presentation at my leisure. It helped me fill in what I missed in class. I just wished that the video worked as well as the audio for each class."

"The webcasting initially seemed to be a distraction while Dr. Klein tried to find the best location and means to convey data (slides, blackboard, etc), but quickly became a matter of routine. Occasionally a beat was missed when the connection was lost and he would need to recap or stop and restart a topic (not very often)."

"The webcasting equipment seemed to improve as the semester ensued. It was very distracting for about the first 6 to 7 weeks of class as Gary was so distracted by the wires and the system losing connection with Geisinger. It happened on several occasions that the connection went down at near the end of class' when Gary was approaching time for lab. It set him back/ subsequently the lab back and was definitely noticeable."

"Yes, the webcasting equipment had an impact on the classroom experience. It was very good for interacting with the remote students. It was fun to be able to see them on the screen. I do not think they were forgotten. Dr. Klein was careful to ask the remote students if they had any questions. He did this on an on-going basis. I think the webcasting enhanced the communication of the project presentations. The webcasting allowed the remote students to see what was going on at the home base. Overall, I think the webcasting went well."

"In response to your questions re: webcasting, I do not feel that it was a detriment to the learning experience. Gary had to intermittently stop and repeat because we lost Geisinger, but it was comical, more than annoying. I enjoyed having his lectures taped so that I was able to go back & listen again. I do not feel a connection with Geisinger."

"I believe having the Statistics classes recorded was a tremendous help to many of us who have not had a formal statistics course for many years, and who do not utilize this information on a regular basis. Having the opportunity to review the material allowed us keep abreast of the information and move along in the course."

Comments from Students on the Rural Campus:

"When it [technology] worked it was wonderful. It was very hard to have 3 hours of just audio, as far as the blackboard process of communication -that was good., sometimes there was no webcast picture, sometimes garbled audio… when there was technical difficulty Justin [support technician] always was able to help solve the problem … Justin was great up here… yes, any questions asked during the session were they accurately presented to the instructor on my behalf… Overall, I think it was really good for our first class with this technology and it is just getting better. Lori and Justin were very helpful and supportive as we experienced technical difficulties. So overall was fine."

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