

Using International Videoconferencing to Extend the Global Reach of Community Health Nursing Education

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ABSTRACT Travel abroad provides college students with a unique learning experience. When plans to take undergraduate community health nursing students from the United States to Haiti were cancelled due to health and safety concerns, faculty piloted international videoconferencing with a nursing program in Haiti as an alternative. During this semester-long course, students in both countries assessed a local community using the Community as Partner framework and compared findings during videoconferences with their international peers. Despite communication challenges such as language barriers and limited internet access in Haiti, evaluative data suggests that all students valued learning with their nursing student peers in another country. For future international videoconferencing endeavors, especially with under-resourced communities, we provide recommendations in the following categories: 1) Building relationships with a partner school, 2) Technology, 3) Pedagogy, and 4) Facilitating interactions between students.

Key words: clinical blogs, community assessment, Community Health Nursing Education, cultural competency, glocal, international videoconferencing.

Constant advances in technology and travel add greater meaning to the old saying, “It’s a small world,” and people around the globe are trying to take advantage of ways to bridge geographic distances and learn from and with multicultural and international partners. Schools of nursing, cognizant of the diverse populations involved in providing health care, aim to prepare their graduates with skills to provide sensitive, culturally responsive, and effective support for patients from various backgrounds. To that end, professional organizations such as the American Association of Colleges of Nursing (AACN, 2008, 2012), the Association of Community Health Nursing Educators (ACHNE, 2009), and the U.S. Department of Health and Human Services Office of Minority Health (2001)

promulgate standards for nursing education that include cultural competence, social justice, and an understanding of global health. Despite these stated intentions, however, campuses in the United States tend to lack diversity (Caldwell & Purtzer, 2015) and clinical experiences for undergraduate nursing students are primarily with homogeneous populations in local inpatient settings (Pirkey, Levey, Newberry, Guthman, & Hansen, 2012).

Travel abroad can provide an ideal opportunity for students to learn and work with multicultural and international populations. However, constraints such as cost, time, and concerns for health and safety may limit student opportunities for international immersion (Chavez, Bender, Hardie, & Gastaldo, 2010). Thus, videoconferencing, which

allows for real-time, two-way, face-to-face interactions between nursing students and faculty located across the globe, can provide an alternative opportunity for international collaboration in nursing education (Burke, Chaney, & Kirsten, 2010; Kempainen, Kim-Godwin, Mechling, Kanematsu, & Kikuchi, 2012).

Research on videoconferencing affirms its efficacy in education. Chipps (2010) reviewed 81 published articles on the use of videoconferencing in nursing education for distance learning to develop and evaluate distance courses in South Africa and concluded that videoconferencing was an effective, appropriate, and cost-effective teaching method. Several subsequent applications of videoconferencing have enabled participants to cross international and regional boundaries with different goals but similar results. For example, videoconferencing has been used to teach nursing students about differences between rural and urban settings in the United States (Pirkey et al., 2012); to virtually cover the many miles between rural students and urban campuses in Australia (Zournazis & Marlow, 2015); to compare public health systems in the United States and Germany (Burke et al., 2010); and to reduce homesickness and stress in students immersed in health projects abroad by connecting students with peers and home mentors (Stephens & Hennefer, 2013).

For our purposes, the goal for international videoconferencing was to provide a low-cost, face-to-face, real-time intercultural learning experience in community health nursing for undergraduate nursing students in two different countries, one of which was underresourced in technology. The two schools involved were the Faculty of Nursing Science of the Episcopal University of Haiti (FSIL) in Léogâne, Haiti, and the University of Michigan School of Nursing (UMSN), United States. We document the challenges and rewards of the first pilot year, discuss lessons learned, and provide recommendations for future semesters.

Background

Videoconferencing was part of a multifaceted improvement plan to add an international component to the community health nursing course utilizing new teaching technology. As most nursing graduates will work in their country of origin, we

aimed to improve student ability to think globally but to act locally, coined as *glocal* thinking in which the global impact is considered along with the significance of local conditions (Hong & Song, 2010). The specific learning objectives were as follows:

1. Students will demonstrate the ability to compare and contrast community assessment data.
2. Students will effectively communicate with an international partner school via videoconferencing and e-mail to exchange information and ideas about community assessment and nursing education in culturally distinct contexts.
3. Students will increase their knowledge of and understanding about the cultures of the two countries.

Videoconferencing took place between FSIL students ($N = 14$) and students ($N = \text{eight}$) from one of nine clinical sections of the UMSN undergraduate course, which consisted of 72 students. In the subsequent sections, we describe the process for conducting international videoconferencing and then present the results of formative and summative evaluations. Evaluation methods were classified as exempt by the Institutional Review Board of the University of Michigan (HUM00083363: "Evaluation of Global Teaching with Videoconferencing Courses"). Students and faculty in both countries granted written permission for the sharing of video recordings and photographs for educational purposes.

Process for International Videoconferencing

There are many different ways to use videoconferencing for international education and the techniques and content will vary according to class sizes, course objectives, and partner goals and resources. Our application of videoconferencing took the form of several 90-minute sessions conducted over one semester of a community health nursing course, scheduled within the clinical practicum portion of the course. The agenda for the sessions followed the clinical schedule for conducting a community assessment (see Box 1). Small groups

BOX 1. *Videoconferencing Session Schedule based on the "Community as Partner" assessment framework (Anderson & McFarlane, 2011)*

Session 1	Introductions and Culture
Session 2	Demographics and History, Education, Health and Social Services
Session 3	Physical Environment, Economics, Communication, Politics and Government
Session 4	Safety and Transportation, Recreation
Session 5	Identification of Strengths and Weaknesses for Each Community
Session 6	Nursing Diagnoses: Goals and Objectives
Session 7	Implementation of Nursing Intervention and Evaluation
Session 8	Final Session, Discussion led by students: Question and Answer session on topics of their choice (clinical placements, leisure activities, etc.)

of students from the two international partner schools participated in the videoconferencing sessions.

No matter what the particular circumstances, steps taken by the partner schools to implement international videoconferencing can be organized into four key categories: (1) Building the relationship with a partner school; (2) Attending to the technological requirements; (3) Developing the pedagogy for the sessions; and (4) Facilitating interactions between student groups. We describe our experience in each of these four categories below.

Building the Relationship with the Partner School

UMSN already had a strong relationship with FSIL, as UMSN Professor Emeritus Ruth Barnard was instrumental in the founding of FSIL in 2005. UMSN had participated in fundraising efforts for FSIL, and ongoing collaboration allowed for the sharing of educational resources to enhance nursing education and nursing services. In 2012, plans to take UMSN undergraduate community health nursing students to FSIL for a study abroad immersion were canceled due to health and safety concerns stemming from the devastating 2010 Haiti earthquake; thus, videoconferencing became a means to continue a collaborative educational experience between the two schools.

The partner schools engaged in consistent communication about the value the experience would contribute to their curricula while meeting their

mutual goal for students to learn principles of community health nursing. In addition, a major aim identified by the FSIL leadership was to help FSIL students improve their ability to speak, read, and write in English, which was their third language in addition to Creole and French.

The plan was to conduct eight videoconference sessions scheduled for 90 minutes each. Due to differences in course schedules for the two countries, the sessions were scheduled weekly over a 2-month period, embedded in the University of Michigan's 4-month semester in community health nursing.

As is the case when implementing any new course endeavor, faculty time spent in preparation and planning was the key to successful videoconferencing. The instructor for the UMSN videoconferencing clinical group (co-author Sarkar) met weekly with the University of Michigan project consultant in international videoconferencing to discuss pedagogy. Faculty from both institutions then developed assignments and agendas for each video session with input from the consultant.

Both partner schools (UMSN and FSIL) committed to providing the necessary resources as available (personnel, time, and equipment). Logistics included identifying start and end dates, identifying the day of the week and time of day that worked well for both partners for videoconferencing sessions, and developing a calendar of topics for each session. Partner faculty in both countries communicated weekly via phone or e-mail outside of the live video sessions to evaluate the most recent session and make necessary adjustments. Flexibility proved essential as faculty at both schools navigated differences between the two countries in relation to curriculum structure, language, global time, and norms for student and faculty use of computers.

Technology

Partner schools needed access to technology experts who could advise on necessary equipment, connectivity needs, and faculty training. Minimal funding was required to obtain the necessary equipment for videoconferencing. A small internal grant to the UMSN from the University of Michigan Office of the Vice-Provost for International Affairs funded initial equipment purchases. The grant also provided extensive consultation with University experts on international videoconferencing pedagogy and

technology, and funded brief site visits to FSIL in Haiti to evaluate conditions and promote relationships.

Videoconferencing for groups with fewer than 20 students is reasonable with a small equipment investment. We purchased a Logitech BCC950 camera (approximately \$200) and a Jabra Speak 510+ microphone (approximately \$200) for the partner school.

During the session, students sat behind tables positioned in a V-shape or U-shape in a classroom facing the videoconferencing system (Figure 1). Each group was in an enclosed classroom of moderate size to minimize background noise and enhance the sound. This setting was conducive to group discussion. At the University of Michigan, the session was viewed on a 54-inch LCD monitor mounted on a video cart with a Lifesize Videoconferencing System-Team 200. At the partner school in Haiti, the camera was attached to a laptop computer and the image was projected through a portable data projector to the six-foot screen in the classroom.

The camera could be adjusted to focus on the whole group or on a few students at a time to enhance visibility. Because of the challenging network infrastructure and room acoustics, later improvements to the connection included upgrading the partner's internet connection from a 3G cellular service to an optical fiber line and adding a handheld wired microphone (SHURE SM-58). The microphone was connected to the laptop using a Mic Mate Pro XLR-to-USB adapter to eliminate echo.

The University of Michigan had a fully equipped classroom for videoconferencing and access to Vidyo™ videoconferencing software, which utilizes a H.264 SVC protocol with minimal bandwidth requirements. This was preferable to Skype, which required four times the bandwidth and was unreliable due to its use of unstable peer-to-peer networking. The partner schools conducted three test sessions before classes began.

Pedagogy

Common themes link global health to community health in the baccalaureate nursing curriculum. Community health focuses on population health and examines aggregate and vulnerable populations; global health focuses on these very same issues. Conducting a community assessment is a typical exercise in community health courses, and yields data to identify the social determinants and health disparities that affect the health of the community (Determinants of Health, 2015). If time and circumstances allow, students then implement and evaluate an intervention that accommodates the unique population as well as environmental and cultural features of the community.

In preparation for the videoconferencing sessions, students were assigned readings about their partner country (i.e., UMSN about Haiti, and FSIL about the United States) that examined the most significant health issues, structure of the health care system, and some background about the history and culture of the country. Per the



Figure 1. The classroom for videoconferencing at the University of Michigan

Students from the Faculty of Nursing Science of the Episcopal University of Haiti (FSIL) in Léogâne, Haiti (FSIL), appear on the computer monitor.

request of FSIL leadership, all readings were in English and FSIL students were expected to communicate in video sessions and e-mails in English.

Due to connection failure, only seven of the eight planned sessions were completed. Each session was approximately 90 minutes in length. The faculty from both universities developed the topics and facilitated the weekly discussions. The topics for each video session (Box 1) were based on the "Community as Partner" model of community assessment (Anderson & McFarlane, 2011). This model divides the community into several areas of assessment: demographics and history, education, safety and transportation, politics and government, health and social services, communication, economics, and recreation and physical environment. Faculty developed a list of assessment questions for each category utilizing the "Community as Partner" model and each area of assessment was assigned a date on the videoconferencing schedule. Anderson and McFarlane (2011) provided in-depth directions including assessment indices and data sources for each area. Faculty selected the most pertinent questions based on experience and course focus.

The UMSN students focused their community assessment on Ypsilanti, Michigan and FSIL students conducted an assessment of Léogâne, Haiti. In both schools, students selected one assessment area to explore and worked in teams with both their domestic and international peers. Additional questions for each assessment area were e-mailed to the assigned students in advance of the video session. Directions for special sections were provided in advance (see Box 2 for an example). Students then prepared written materials, and instructors from the two schools exchanged this content via e-mail. This prework facilitated better discussions during the videoconferencing session as FSIL instructors could assist their students who were still learning English. The students assigned to a session's specific assessment topic took more active roles in leading that segment, and all students were welcome to contribute. To facilitate reflection after the sessions, especially for those students uncomfortable with English, UMSN students took notes during the session, which were then distributed to all participants.

Primary responsibility for facilitating the discussions rested with faculty. Videoconferencing requires flexibility on the part of the faculty as it is

difficult to determine which topics will stimulate the most discussion. Faculty must find the balance between the value of continuing a particular discussion thread and the need to assure that all topics on the schedule are covered. Preplanned structure was necessary due to differences in languages and in student comfort with speaking up in this venue. Casual discussion was encouraged when possible.

During the videoconferencing sessions, students explored the similarities and differences in the assessed communities as well as the related impact on health issues such as infant mortality and childhood nutrition. Each session built on previous sessions and led to the completion of the nursing process. For example, in Session Five (Box 2), the focus was on comparing strengths and weaknesses of the two communities. During this session, UMSN students identified the presence of Eastern Michigan University in Ypsilanti, Michigan, as a strength because the University and its students provided many services to the community, including after-school tutoring, volunteer hours for community organizations, and faculty who serve on boards for nonprofit groups.

FSIL students noted that the majority of people in Haiti have a cell phone, which they explained was a major strength because it means there is a mode of communication through which to reach many people. In remaining sessions, students and faculty discussed their observations in the context

BOX 2. An Example of the Assignment and Agenda for a Videoconferencing Session

Instructions for videoconferencing session five: assessing community strengths and weaknesses

1. In preparation for the videoconferencing session, students will review the minutes from prior videoconferencing sessions as well as the data they have gathered for their assigned area of the community assessment; then, they will identify the strengths and weaknesses of the community, and highlight the data that supports these determinations.
 2. During the session, students will present:
 - Five strengths of Ypsilanti with supporting data
 - Five strengths of Léogâne with supporting data
 - Five weaknesses of Ypsilanti with supporting data
 - Five weaknesses of Léogâne with supporting data
 3. Students will then discuss the similarities and differences of strengths and weaknesses identified for each community.
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of the local conditions for the different communities and the resultant implications for health interventions. Students then formulated a nursing diagnosis based on one identified weakness and developed a plan for implementation and evaluation that would utilize the community strengths or resources.

As noted previously, only one of the nine UMSN clinical groups participated in videoconferencing with the partner school in Haiti. However, students in all nine clinical sections of the UMSN community health nursing course ($N = 72$) used a private class blog to share experiences, assessments, and intervention plans. Details about our innovative application of blogging in a community health nursing course, which utilized features of Google Docs, Forms, Sheets, and written narratives to facilitate student sharing and comparisons between communities, are provided elsewhere (Ziemba & Sarkar, 2013).

As the FSIL students were unable to access the blog due to connectivity limitations, the UMSN clinical students in the videoconferencing section with FSIL assumed responsibility for posting information about Haiti on the class blog. For the first blog topic, students filled out a Google Form with statistical demographic data and narrative impressions about their respective clinical communities. Using the information from other clinical sections published on the form-populated Google Sheet, the students then composed a second blog post in which they compared and contrasted the data from the different communities and posted a summary. In subsequent posts, students reflected on the progress their clinical group made and challenges they faced in their community assessments and developing community health interventions. Students individually offered suggestions regarding challenges identified in other clinical groups' posts by responding through comments.

Facilitating Interactions between Students

All students shared their photos and short introductory profiles via email before videoconferencing sessions began. It was very helpful to have photos and names available during the videoconferencing sessions so that students and faculty could refer to each other by name and begin to establish relationships. The design of the class blog and internet

limitations in FSIL precluded using the blog for sharing photos and student profiles.

The videoconferencing sessions were conducted in English per the request of our partner school, but some translation was necessary. One of the FSIL faculty provided translation as needed. UMSN students had minimal to no experience with communicating with students using a second or third language and needed to adapt to the time needed for translation. Due to the limited time available during videoconferencing, small student e-mail groups were created for students to communicate outside sessions, to learn about each other's clinical training, and to discuss the assignments.

Evaluation

Both formative and summative evaluation methods were employed to assess student attainment of learning objectives and to evaluate users' experiences with the technology. Throughout the semester, faculty evaluated student attainment of learning objectives based on the quality of written assignments and discussion during videoconferencing. In addition, consultants observed the quality of connectivity and ease of communication in each videoconferencing session. At the end of the semester, UMSN students completed a full community assessment and implementation plan for their community that was shared as a PowerPoint presentation with the rest of the UMSN nursing class and graded by faculty. FSIL students similarly completed the assessment portion and examined possible nursing diagnoses and interventions, which were evaluated by FSIL faculty. FSIL students did not develop a formal PowerPoint presentation as their class was going to continue for another 6 weeks with other assignments.

At the end of the semester, students from both schools were asked to evaluate the experience by providing written responses to several open-ended questions (see Box 3), for example, naming the most important things they learned from their international peers, giving examples of features of the other's community, and identifying the most valuable aspect of the videoconferencing sessions. Students also evaluated the effectiveness of the e-mail exchanges with their partners. Students were asked to describe challenges to communication and to offer suggestions for improvement. FSIL

BOX 3. *Self-report Student Summative Evaluation Questions*

Summative evaluation questions

Asked of students in both countries

What are some of the most important things you learned from your peers at the other school/in the other country? Think about things you learned that you could not have learned via lecture or texts. Please be specific.

Describe any challenges to your communication. How did you try to address the challenges? Is there something we could do to facilitate the e-mail exchange?

What suggestions do you have for improving the international exchange with the other country, in addition to improving the technological quality of the connection?

Please give an example of something you learned about the other community of (Léogâne or Ypsilanti) that informed your understanding or assessment of your own clinical community.

We welcome any additional comments you may have.

Additional questions asked of UMSN students

What did you find most valuable about the videoconferencing sessions?

What was the most valuable aspect of the e-mail exchange with your partner?

Additional questions asked of FSIL students

Sometimes I did not ask questions because. . .

What can we do to help you with the English language component (either spoken or written) of this exchange?

students were asked additional questions about language barriers. The final evaluation with FSIL students was conducted in French and answers were translated into English.

Students' responses to the open-ended questions collected at the end of the experience provided rich feedback and are tallied in Table 1. Evaluation questions were intentionally open ended to allow students to identify the most important themes. Not every student responded to each question. Due to replication of themes in responses across all questions, only selected questions appear in Table 1.

Learning Outcome #1: Students will demonstrate the ability to compare and contrast community assessment data

Achievement of Learning Outcome #1 was demonstrated in response to the question, "What are some of the most important things you learned from your peers at the other school/in the other country?" All responses gave examples of information about their individual community assessments, and opinions

and comparisons of the two countries and cultures. All eight responses by the Haitian and six responses by the UMSN students mentioned the comparisons. For example, one Haitian student wrote, "I was able to apply what I learned about the assessment of the Ypsilanti community to my assessment of Léogâne." Another Haitian student compared the assessment data between the two communities, remarking upon the ways that "Haitian society is different from that of Ypsilanti in economic, social, and cultural aspects"; another Haitian student focused on the ways in which the "economic situations are different. The level of education among people of the Ypsilanti community is higher and the rate of unemployment is lower."

The ability for the students to compare and contrast was demonstrated in their responses to evaluation comments, but more importantly through their videoconferences (formative). UMSN students further demonstrated the ability to compare and contrast communities in bi-weekly blog posts. When comparing various clinical communities on the blog, one student from UMSN remarked, "The most striking comparison between two communities for our group was that 80% of the population of Haiti is below the poverty level whereas Ypsilanti is listed at 26.4% below the poverty level. Ypsilanti [has] the highest percentage of people below the poverty line of the [domestic] communities that our class researched."

Learning Outcome #2: Students will effectively communicate with an international partner school via videoconferencing and e-mail to exchange information and ideas about community assessment and nursing education in diverse cultural contexts

Sessions were frequently—although usually briefly—interrupted due to the limited strength of the wireless connectivity available at the partner school in Haiti. Eight videoconference sessions were planned, but only seven sessions were completed; one was canceled due to weather-related connectivity issues. Sound quality was often impaired due to the acoustics in the classroom at FSIL. However, in summative evaluations, students rarely complained about the technical quality of the connection, instead focusing on the context for communication, and—especially for FSIL students—the language barriers.

TABLE 1. *Students' Responses to Selected Open-Ended Evaluation Questions*

Question	FSIL: <i>N</i> = 14 students Keywords & Phrases (frequency/total responses)	UMSN: <i>N</i> = 8 students Keywords & Phrases (frequency/total responses)
What are some of the most important things you learned from your peers? Think about things you learned that you could not have learned via lecture or texts. Please be specific.	Students' ways of doing things; How they react; how they organize work; Necessity for nurses in the resolution of problems in the community (4/8) Their morals, their culture, and the way they go about providing health care; We exchanged our ideas about the care of our patients; Education, communication, community (3/8)	How their government works; How they felt about the issues facing their country; personal opinions about healthcare in Haiti; Info about the students and their personal experiences (4/6) It's a unique culture that has very different community health problems; Insight into their lives and culture; School structuring, nursing educational quality (3/6)
Describe any challenges to your communication. How did you try to address the challenges?	It was difficult to: Communicate in English; understand and pronounce English words well; hear certain words; find the right medical words. Information across the video was not clear. Students spoke a little bit too fast (8/11) I didn't really encounter difficulties (2/11) It was difficult to pay close attention and look for translations in the dictionary and make sure nothing escaped me; Improved with the help of my partner; I had to use a dictionary (4/11)	No challenges; Didn't have any problems while communicating; English was very good; Responded in Creole/French but were able to translate (3/5) English was a major challenge (1/5) It would help if we start communicating via e-mail sooner; Beneficial to use the e-mail correspondence earlier (2/5)
Please give an example of something you learned about the other community (Léogâne or Ypsilanti) that informed your understanding or assessment of your own clinical community.	Their community is different from that of Ypsilanti in economic, social and cultural aspects; The economic situations are different; Aspects of their culture, their morals, and how their state of health is different (4/9)	The experience put more of my community into perspective; I learned about the lack of resources available to the nurses in the community; I learned from the facts and information they shared about the community; I learned about complications of high infant mortality; I learned that crime is difficult to handle and about the police presence (5/5)
What suggestions do you have for improving the international exchange with the other country, in addition to improving the technological quality of the connection?	More media for the course in order to better understand; Support the maintenance of the internet at school; More exchanges, and have the exchanges in two languages (English and French); We have to improve our English; Speak more slowly (5/10)	Have a goal in mind for each session; Provide questions to prompt the students in advance and students to lead the videoconference; More personal communication and vary the subject matter; Starting e-mail communication sooner; Allow students to lead discussions and help plan topics (5/6)

Prescribed session agendas were helpful and informal communication during some of the live sessions about clinical experiences, leisure activities, and music preferences built familiarity among the students. Students from both schools requested time to talk about their clinical experiences and other aspects of their nursing education. One UMSN student described her favorite memory: "I really liked it when it was more conversational and about personal experiences. There was one day in

particular that I loved; I remember one of the Haitian students asked me personally about my clinical experience.” As the UMSN students became more comfortable, they asked to moderate the sessions themselves instead of relying on the faculty. This request was repeated in the summative evaluation. FSIL students recommended that UMSN students speak more slowly and explain terms, and desired more tools and assistance with translations. Although e-mail exchanges between pairs of students were useful, the language barrier and limited access to internet in Haiti restricted the amount of e-mail communication between students. Students requested that e-mail exchanges start earlier in the term. FSIL students appreciated writing and speaking English with UMSN students as a means to improve conversational and medical English.

Learning Outcome #3: Students will increase their knowledge and understanding about the cultures of the two countries

UMSN students noted that the “FSIL students provided valuable insight into their lives and culture” and that the “most valuable [component of videoconferencing] was learning about the FSIL students and their personal experiences, which could not be obtained via a web search.” Other UMSN students appreciated “the experience of obtaining a global health perspective without leaving campus” and noted how useful it was to “understand how [FSIL students] felt about the issues facing their country; getting a personal opinion about health care in Haiti was useful.”

FSIL students similarly shared positive feedback regarding the experience, noting: “I think that you must continue with this exchange between the young people of these two communities. This videoconference helped me to enrich my vocabulary and to see what I have in common with other young people, and what differentiates us.” Another FSIL student remarked that “it was a good thing for us students. I liked that the emphasis was placed equally on culture in the communities.”

Discussion

Our experience supports that videoconferencing may indeed be an efficacious alternative to study abroad. Videoconferencing provided a cost-effective alternative to travel while still allowing students to

learn about another culture, as well as the nature of health care delivery, from the local population. Students in both countries had overall positive evaluations, noting that talking with students from the other country and learning about their personal experiences and views could not be obtained from textbooks or other internet resources. Students from both countries discovered similarities as young health professionals in training in two vastly different communities. Both groups saw the common results of health disparities on their communities. Although language barriers were frequently cited as problems, the Haitian students reported that the experience increased their skills in English, which they appreciated.

Costs for the entire pilot project included travel to FSIL by a UMSN technical expert on videoconferencing and one UMSN community health faculty for a 3-day visit before the semester started. Costs of travel, equipment, and four textbooks for FSIL were considerably less than the total costs of travel for faculty and students for a 2–3 week study abroad immersion.

Challenges and new strategies for future videoconferencing sessions with FSIL are summarized in Table 2. Our experience echoes the conclusion by Chipps (2010) that improved infrastructure in underresourced countries may be required to make this learning technology more widely available. Stability and reliability are essential for effective videoconferencing discussions. The network needs to be strong and wireless connections may not be up to the task. After this first year, the University of Michigan purchased Blue Jeans™, a videoconferencing cloud service. Blue Jeans also utilizes H.264SVC protocol with minimal bandwidth requirements. It provides a superior audio quality that is the key to effective communication over a video link. Other video session participants are invited to the Blue Jeans meeting, which is arranged by the host school.

To address the issue of connectivity for future semesters, additional funding was obtained to assist the partner school to obtain a fiber-optic connection, and to improve the picture and sound quality in the FSIL classroom setting through minor structural additions. These improvements facilitate communication capabilities for the community health nursing course, and increase FSIL overall capacity for information technology.

TABLE 2. *Challenges and Remediation Strategies for Videoconferencing*

Key Categories	First time strategies & Challenges	Next time strategies
Building relationships with partner school	Site visit to develop the pedagogy and schedule as well as test equipment. Discussion of mutual goals for the experience. Weekly phone conferences to evaluate sessions and make necessary adjustments.	Schedule yearly site visits for evaluation and planning. Weekly phone conferences between faculty leads.
Technical challenges of videoconferencing (i.e., poor connection; signal frequently lost, low bandwidth)	Great patience needed with low bandwidth connection. Extensive consultation with IT experts. Low bandwidth as barriers to information access for FSIL students and faculty.	Obtain funding to support fiber-optic connection for FSIL. Obtain funding for improvements to acoustics in FSIL setting. Continue consultation with IT experts and training for proper use of equipment. Create exchange mechanism via the Knowledge Gateway of the World Health Organization. Replace Vidyo™ with Blue Jeans™ software.
Pedagogy	Comparison between US and Haiti communities accomplished best by video participants. Limited didactic content on global health.	Each clinical group to have international or local vulnerable population as a clinical partner. International guest speakers invited to lecture. More explicit content and case studies in lecture about global health concepts and social determinants of health.
Facilitating interactions between students	Students post photo and profile. Informal communication during live sessions about clinical experiences, leisure time activities, favorite music, etc.	More “Introduction time” between students. Language students to translate medical & course terms from English to French and language lessons/materials/on core topics. Increase training of all students on communicating with others, speak slowly, avoid slang. Encourage e-mail communication in small groups or provide for small group chat as part of session.

Even though language barriers will continue to interfere with student communication from both partner institutions, improved connectivity should increase student enthusiasm for face-to-face and e-mail communication and may lessen the burden of time for translation. Exchanging country profiles 2 weeks in advance and student profiles and photos 1 week in advance of videoconference sessions may increase familiarity among the students from both institutions, which should in turn lead to additional relationship building and, ideally, increase the confidence of all students to speak up and communicate with each other.

We learned that low bandwidth capacity interferes not only with interpersonal communication but also with the ability of FSIL partners to access

information resources. FSIL partners faced barriers to downloading resources provided by UMSN and also faced limitations for uploading information. The data package available to the entire school in Haiti was substantially less than what an individual UMSN student might use. During future iterations of international videoconferencing, we will use the “Knowledge Gateway”, a platform sponsored by the World Health Organization designed to share information with and between low bandwidth countries. The Knowledge Gateway allows for exchange and storage of documents, photos, and other resources. The resources will include open-source materials accessed from the University of Michigan library and others shared by the students and faculty.

Success with extending aspects of the international videoconferencing experience to include all 72 students from the UMSN course was very limited. Our primary strategy to connect all students was the class blog, which FSIL students were never able to access. With time and experience, we may be better able to assist our international partners to contribute directly to the class blog. However, language barriers and the limited amount of computer access available to FSIL may persist as critical barriers.

This experience emphasized the importance of introducing more global content into the didactic course so that all 72 UMSN students would benefit. Interventions to be explored include insertion of more explicit global health content into the didactic curriculum and inviting international guest speakers when possible. Also, in the future, each clinical group will work with an international and/or underserved population in the clinical experience.

Future plans are to conduct a more formal evaluation of methods to develop cultural competence awareness in UMSN students. Evaluation will compare three approaches for clinical rotations among students in the community health nursing course: Immersion (travel abroad), Virtual (videoconferencing), and Glocal (working with a local ethnic or underserved population).

International videoconferencing provided novel opportunities for undergraduate nursing students in two countries to learn about community health in a global context. Our final advice is best expressed by one of the FSIL students: "All that I have to say is good work. The initiative that you and our Dean have taken was not easy, but it was fruitful. Therefore don't step back in front of obstacles and difficulties."

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