

**Building the Scholarship of Remote Presence Telementoring: Extending the
Application in Health Education and Practice
Invitational Forum: March 3-5, 2014**



**Report
Prepared for the
Canadian Institutes of Health Research**

By

University of Saskatchewan

**College of Nursing &
International Centre for Northern Governance & Development**

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We thank all the Forum participants who helped us accomplish our goal to establish a network of innovation leaders and build scholarship for technological advances such as remote presence that is occurring in health care.

A handwritten signature in black ink, appearing to read 'Lorna J. Butler'.

Lorna Butler, PhD
Forum Chair

THE REMOTE PRESENCE FORUM

Goals & Objectives

This project was funded to bring together a team of national and international innovation leaders in medical telementoring to build a network of scholarship that could parallel and support the technological advances that are occurring in clinical practice. Given that the field of health technology is quickly evolving, this newly established network would aim to disseminate knowledge around the use of technology in health science education and health care delivery, especially as applied to northern and remote areas.

The invited participants had expertise in how to inform policy and consider ways to share best practices as part of an overarching goal to improve health services and outcomes to address issues of sustainability. The Forum participants viewed telementoring as an extension of telehealth – or the next logical step in advancing telemedical practices.

Saskatchewan and Canada are situated to be global leaders in using remote presence technology (RP) both in health sciences education and in rural and remote clinical practice. The specific objectives that guided the work of the Forum included:

- 1) Engage participants in consensus building on research questions generated as the remote presence platform emerges across Canada and extends globally. The implementation of this type of technology has the potential to transform the delivery of health education and practice. There is an emergent need to explore implications for health practice, education and policy as practice changes are beginning to occur.
- 2) Create a Canadian-led network of innovation leaders to advance the science and knowledge dissemination of the field. The extension and application of remote presence is evolving. A unique opportunity exists to contribute within and across health specialties and health sciences applications. No established, collaborative network presently exists in this field.
- 3) Facilitate dialogue between northern and Aboriginal stakeholders (primarily health administrators) and researchers to ensure research and advances in the uses of the telementoring and telemedical technology is practical and effective from an end-user perspective; and to ensure northern stakeholders have an opportunity to inform and contribute to research questions.
- 4) Construct a model for extending the teaching and training programs that are being realized within the academic health sciences to address the rural, remote and northern needs of Canadians. The inclusion of knowledge users is essential for community development and engagement in health education and service delivery.
- 5) Develop a framework for a series of discussion papers, using remote presence as the model, on learner centeredness, community acceptance, feasibility, and funding of telerobotics in health for community leaders, First Nations community bands and councils, administrators, funding bodies and policy makers.
- 6) Explore the feasibility of extending the remote presence technology to connect with mobile communications such as eHealth and mHealth opportunities for individual and community based initiatives to address health promotion and chronic disease management within a global context.

Participants

To achieve the Forum objectives a selected team of international researchers, educators and northern stakeholders who are presently using or have invested resources in the use of remote presences technologies were invited. The full Forum agenda with a list participants can be found in Appendix A.

Outcomes of Objectives

Objective 1: Engage participants in consensus building on research questions generated as the remote presence platform emerges across Canada and extends globally.

It was a privileged to have the innovator of the remote presence telerobotics system and CEO of InTouch Health, Dr Yulun Wang as a speaker and full participant at the Forum. [See Appendix B] InTouch Health provides an acute care telemedicine solution to support clinical care consultations globally. “InTouch Health Inc., partners with hospitals and health systems to build financially sustainable programs that deliver superior clinical outcomes. The company is the only healthcare-centric solutions provider that collaborates with customers on telemedicine strategy, market opportunity, clinical program development, and service line growth and expansion” (<http://www.intouchhealth.com/company/>) The RP is being used by over 2000 physicians with a high percentage of consultations in neurosciences, particularly in relation to rapidly developing Stroke Care Networks. Three additional representatives from InTouch Health Inc., attended the Forum.

The successful application of technology to remotely connect physicians for the provision of high quality, acute care provided the idea that nursing could replicate the intensity of the work in a classroom setting. At the time of the Remote Presence Forum, the University of Saskatchewan was the only undergraduate nursing education program using remote presence to deliver a nursing education curriculum to a remote, northern region. The University of Cincinnati recently recruited a Chief Officer of Innovations & Entrepreneurship who has extensive experience in using remote presence for nursing practice.

The participants were carefully chosen to represent individuals who were “*big picture thinkers*” and *early adopters of change such as the RP innovation*. Participants were from northern communities where RP was being implemented, local and provincial governments and First Nations Band representatives, health authorities and educators from clinical and university settings. To consider social determinants of health as key to implementing an education program as well as the health disparities within rural and remote environments, northern partners were invited from Siberia and Alaska.

The provision of a north-south comparator that embraced remoteness, Indigenous ways of knowing and similar social determinants was accomplished by including representatives from the Philippines. The global perspective encompassed, two North American countries including three states in USA and two provinces in Canada; Russia with three representatives from Yakutsk, Siberia; Philippines with two representatives from Quezon, City, Manila and one InTouch Health representative from London, England who is responsible for the Russian territory. The majority of the participants were from northern Saskatchewan who were they key community leaders

whose work and influence has been integral to the success of RP. As evidenced by the invitation in Appendix C, the President of the University of Saskatchewan, the mayors of the two northern communities where the RP-7i are located in classrooms and the Minister of Advanced Education had key roles in launching the Forum and situating the 3 day event within the context of highly creative and ground-breaking initiatives. A video of the student experience in using RP as part of their education program was launched by the President and Mayors to demonstrate sense of shared ownership in this partnership.

Appendix A describes the opportunities to showcase the existing relationships that are being further established as part of the Forum to create a sustainable, global platform. Shared issues of determinants of health and challenges from a governance perspective were highlighted by the Tuesday panel to provide a broader context for participants to consider in creating a research agenda for a new and developing field of health related technology.

Outcome of Objective 1 – Met

Objective 2: Create a Canadian-led network of innovation leaders to advance the science and knowledge dissemination of the field.

In preparation for the Forum, the University of Saskatchewan and North Eastern Federal University (NEFU), Yakutsk, Siberia were discussing the idea of a Summer Institute for nursing students to “learn with each other from where they live” NEFU had experience with Summer Institutes and agreed to host an initial session. The University of Saskatchewan had an existing relationship with University of the East Ramon Magsaysay (UERM) from a previously funded Planning Grant “The Meeting of the Minds”(2008). To consider both north-north and north-south determinants of health for Indigenous people in rural, remote and northern regions, UERM was invited to participate. Representatives from the three universities met as part of the Forum.

The purpose of the Summer Institute is to link global communities for students and faculty to share expertise, knowledge and insights to address the challenges facing Indigenous people in achieving optimal health and well-being. Creating a high degree of synergy among global partners, from north to south, will enable learners to expand beyond traditional thinking and health practices through shared learning. The Summer Institute is designed to create a caring and stimulating learning environment that promotes active engagement in learning, leadership, critical thinking, and encourages interprofessional collaboration for lifelong learning. The three universities are responsible to facilitate the development and use of innovation, creativity, and self-direction for learners to become active agents of change in health care. Students will have the opportunity to engage with others whose contributions are closely aligned with our mission as “vibrant intellectual communities.” Intellectual communities are about knowledge. Engaging our intellectual communities consists of two processes: the delivery of nursing education through distributive learning methods and the experiential aspect of clinical education in the practice environment

The Institute

Vision

Our vision to be global leaders in “putting health into place” for Indigenous people.

Strategic Initiatives

Four pillars represent the guiding principles and values underlying an interprofessional approach to health education that will realize our vision for global leadership in indigenous health:

Collaboration: seeks to broaden our understandings and approach from the traditional; we can embrace the context of health and health education with our global communities to facilitate shared learning and scholarship. Relationships established globally will serve to broaden and strengthen indigenous health.

Complementation: is the process of integration, of equity in achieving common goals and of respect for global diversities that are culturally bound. In addition to creating cultural awareness, an obligation exists to build global citizens and trusting relationships across boundaries.

Transformation: is the ability to include indigenous knowledge in curricula. Transformation will occur as educators become skilled in using indigenous pedagogies and knowledge systems within and among our intellectual communities.

Health Quality: Transparency is fundamental to creating quality. Collaborative efforts among involved global communities will be essential to select and develop quality indicators as the standard outcome measures for student and faculty engagement in the Summer Institute.

Method of Delivery

The Summer Institute will be delivered using a combination of methods. Students will be in a classroom setting at NEFU. Lectures will be supported by technology including remote presence (RP) and videoconferencing from both U of S and UERM Colleges of Nursing to engage international experts and ensure the global nature of the Institute. Remote presence technology will be used to assist students' fieldwork in remote communities where cellular coverage can support the international linkages between faculty and students. RP will be supported by the implementation of the RP-Xpress robotics system from InTouch Health Inc.,. Guest speaker Cindy Roleff, Telehealth Coordinator from the Alaska Native Tribal Health Consortium in Anchorage, Alaska, assisted with understanding competencies for practicing nurses who will be engaged in the use of telehealth.

Network of Nurse Educators

The interactions among participants from different countries as well as among Canadians attending the Forum demonstrated the lack of knowledge about pedagogy when teaching within a remote presence technological environment. Experiences described were related to service

delivery with specific points of care being considered. The use of RP to reach remote areas must also consider the learning environment, the ability of the faculty to teach remotely and the preparedness of the learners at the endpoint. It became obvious that little was known about how existing programs are using technology to support distributed learning and to what extent this application is used for Indigenous populations. It was identified that a need exists to create a Canadian, northern, nursing, education network to share delivery methods and best practices in education [See Figure 1]. The International Centre for Northern Governance and Development (ICNGD) has a jointly funded program with the Sami Centre at The Arctic University of Norway in Tromsø. Through those relationships it was learned that the Tromsø College of Nursing has a decentralized program. Linking with those professors will help to create a circumpolar component and broaden a Canadian network to have a more global perspective. The visiting professors from Philippines and Yakutsk do not have distributed nursing programming at their universities. However, Yakutsk is a strong partner within the international, virtual run programs of the University of the Arctic.

Outcome of Objective 2 : Met

ADDENDUM

It was announced at the Forum that the ICNGD funded four students to attend the Summer Institute to be held at NEFU in Yakutsk in August, 2014. This institute will have 3 countries participating with an interprofessional approach from students in northern studies and nursing.

Dr Heather Exner-Pirot, Strategist for Outreach & Indigenous Engagement will lead an initiative to bring together representatives from the eight Colleges of Nursing across Canada to determine if there is an interest in creating a northern nursing education network and to share best practices for outreach in support of an Aboriginal Nursing Workforce. She will also invite the Aboriginal Nurses Association of Canada. Funding will be supported by the University of Saskatchewan, College of Nursing.

Emmy Neuls and Dr Lorna Butler will pursue relationships with College of Nursing in Norway for joint application to fund collaborations for distributed education. Ms Neuls will lead the application process as ICNGD was successful in obtaining funding through the Norwegian government to create research alliances with North American researchers.

Figure 1

MODEL FOR RURAL, REMOTE & NORTHERN TEACHING AND LEARNING



Objective 3: Facilitate dialogue between northern and Aboriginal stakeholders (primarily health administrators) and researchers and to ensure northern stakeholders have an opportunity to inform and contribute to research questions.

To be true to our community development approach of “learn where you live” and the engagement of individuals critical to the success of the northern nursing program, the membership of the Forum had to reflect the experiences and future needs of the people we serve in Saskatchewan. As noted in Appendix A, the second day of the Forum was moderated by Mayor Favel from Ile A la Crosse. The panel presentations were designed to provide a community level perspective of the determinants of health, the technological factors that influence various regions to address accessibility and service delivery and opportunities to link globally to engage in cross country collaborations.

Government [Federal, Provincial, Municipality, First Nations Bands]	Regional Authorities	Organizations
Federal Health Canada – Ottawa – declined First Nations & Inuit Health Branch – did not attend Provincial Minister of Advanced Education Chief Nursing Officer – unable to attend – Legislature in session Municipal Mayor of La Ronge Mayor of Ile A la Crosse Mayor of Saskatoon – in council – unable to attend Minister of Advanced Education	 Medical Health Officer Northern InterTribal Health Authority (2 representatives) Population Health Unit TB Control Mamawetan Churchill River Regional Health Authority - 2 representatives Keewatin Yatthe Health Authority Inuvik Metis Council	 Saskatchewan Registered Nurses Association Conference Board of Canada Northern Medical Services Northlands College*

Creating a framework for a research agenda requires input from multiple jurisdictions. The table below shows that we attempted to strategically provide the opportunity for participants to experience the synergies among the presenters.

The Mayor of LaRonge gave the keynote address on Tuesday evening. His message was to position the region as one that is ready to build a northern hub for education. The demographics of the north shows potential of a young workforce and the technology that RP brings to the region also supports the infrastructure for development of both large industry and small business. The advances that RP presents to the region is an investment in building human capacity *in the north for the north*. Through education we are helping to provide for “a healthy, self-reliant population—a healthy and vibrant community.”(Mayor Sierzycki, 2014)

Outcome of Objective 3 – Met

****It is important to recognize Northlands College as the major stakeholder in the success of the northern nursing program. Northland and University of Saskatchewan are partners in the delivery of this program.***

Objective 4: Construct a model for extending the teaching and training programs that are being realized within the academic health sciences to address the rural, remote and northern needs of Canadians

Participants were pre-assigned to groups with a designated question. Group composition reflected the expertise to support dialogue for the questions. Global representation was also considered to ensure inclusion of diversity and tacit knowledge that reflected geographical and cultural differences. [See Appendix D]

Findings from each group were not mutually exclusive but were combined to determine the key constructs. Five key constructs emerged:

- Relationship
- Contexts of Learning
- Connecting Community Champions
- Indicators of Success
- Pathways for Knowing

The notion of *relationship* was evidenced from the dialogue of participants in both Teams 1&2. Team 1 referred to relationship as graduates becoming translators of remote presence practice. It is the student who will personify the remote presence thus ensuring the “humanness” of the RP interactions. Educating with RP teaches students compassionate care as high tech with the feelings of high touch that will, over time, become normalized within the practice environments.

To some extent, prior work by human geographers has demonstrated that people-environment relationships are influenced by feelings and emotional responses to one's environment and pre-existing relationships within that environment. This is particularly relevant within health care.¹ It was identified that in some remote/northern communities there is a prevailing culture that can powerfully influence the ability for "touch" to be acceptable. It may be more important to first create a safe, honest environment for interactions, which the remote presence's "in person" approach provides for patients and families. Building relationships may also benefit by using blended approaches to connect within communities.

Team 2 viewed relationships from the perspective of sustaining this new knowledge from education to clinical practices. Presence within the community and engagement with clinicians in practice were crucial considerations for success. For some communities in both remote and northern regions, technology is still progressing. Acknowledging the reality that "technology doesn't live here" means relationships have to evolve to create a "local presence" that links the community with other centres not previously possible. For example, InTouch Health in Santa Barbara, California now has a presence in northern Saskatchewan as the support for the RP.

The opportunity to link globally using RP has the potential to change the landscape in favour of new student learning environments. Team 2 identified *contexts of learning* as a key factor to consider with the implementation of RP. The ability for curricula to remain contextually relevant could become challenging as face to face classrooms progress toward global learning environments. Traditional models of community based/decentralized teaching in the health sciences could readily apply tacit knowledge within the classroom. However, finding comparable determinants of health and quality indicators that link local to global will require new pedagogical approaches that are yet to be determined.^{2,3} Consistent findings were reported from Team 5 but with an emphasis on the learning curve this now present to our professorial.

Team 2 was purposeful in moving from relationship building to creating long term, established relationships focused on mentorship for continued learning. Recruiting new nurses and particularly new graduates to rural, remote and northern communities is a beginning. Providing resources to support their practice in terms of continuing education and professional development is essential for a workforce planning strategy. The Aboriginal Nurses Association of Canada (ANAC) has mentorship as one of its strategic initiatives. Using RP as a method to partner with the ANAC will position Saskatchewan Aboriginal and northern nurses to have access to culturally sensitive and contextually relevant mentors.⁴ Remote presence is a new technology with a powerful influence on how health care can be delivered. Educating nurses to use this technology is transformative and pushes the boundaries of the practice environment. For the first graduates who are familiar and comfortable with this technology, transformation within the practice environment may become their greatest challenge.

Using RP assumes that:

“The status quo and creativity are incompatible. Creativity and innovation always walk hand in hand.” (Maxwell, 2009, p.29)

Having a cohort of new nurses educated with this expectation will present its own challenges to the health care setting, however, the engagement with the communities and relationships that are established for shared ownership of the programs should support a positive integration of new knowledge.

Mentorship for continuous learning was not confined to health professionals. Team 4 noted that local champions were necessary to advocate for needs at the community level. ***Connecting community champions*** to form a network of global intelligence could disseminate and apply lessons learned on an international scale. The goal is to find people who want to think differently and lead change.⁵ The team suggested that certain circumstances needed to be considered to support success at the community level. These included:

- Determine multiple uses for remote presence when not in use for teaching
- Within the range of users have clarity on priority uses, accessibility of the technology
- Ensure connectivity and technology support prior to implementation
- RP be viewed as a gateway to linking local with “outsider knowledge” – provincial, national and international
- Demonstrate how access to health care improves quality of life and sustainability of a community by helping to build capacity in the north for the north

If there was a desire to scale up the use of RP in a region, these issues have circumstantial implications for success.

Individuals who champion change will act on their ideas and begin to piece together multiple perspectives that are essential to building a vision for RP. The Keewatin Yatthe Health Authority (KYHA) offered to invest resources to become a HUB for remote presences telementoring in Saskatchewan. Acting on this offer would be highly innovative and strategic given that most projects of this magnitude are situated in urban, teaching hospitals and universities. We developed our Forum based on the ideas generated by a model of Integrated Innovation⁶.TM Integrated InnovationTM demonstrates the “powerful synergy” (p. 4) that occurs when scientific/technological, social and business innovations align to manage a global challenge such as health care. Scientific/technological refers to the ability of RP to address the educational challenges of remote, northern and rural communities; social innovation refers to how resilient RP will be over time given the contextual challenges within the environment such that social and financial outcomes are linked; and, business innovation refers to the affordability of RP relative to its functionality and usability.⁶ (p.7)

Several participants at the Forum were from regions that are accentuated by remoteness and accessibility. For example, both Yakutsk and KYHA experience similarities in meeting the health challenges of their communities. These similarities provide not only a common ground for working together but an ability to tap into tacit knowledge that is situated in the lived experience of nurses who must learn to be highly creative in their practice. Building a high degree of synergy among global partners will enable learners to expand beyond traditional thinking and create new health practices through shared learning opportunities made possible by RP.

The use of RP invites researchers to develop new evaluation approaches that capture the transformation occurring within a community. Developing ways of measuring social innovation can provide metrics that assess both social and financial differences.^{7,8} Social innovation purports that collaboration across sectors is necessary to find the best ideas to solve complex societal problems. The strength of involvement will lead to greater participation in decisions that ultimately affect issues that impact people's lives, in this case, nursing education for improved health. Social innovation maps how shared intelligence has evolved thus identifying strengths and/or gaps in networks of stakeholders.⁹

To assess progress, evaluate the cost benefits and quality of service in the use of RP for both nursing education in northern Saskatchewan as well as its capacity for clinical service delivery within the health regions, an agreement on *indicators of success* is important. Team 4 suggested that indicators should be able to inform a pathway for rural, remote and northern health equity using eHealth innovations. Indicators included:

- Human Resource measures such as
 - Retention,
 - Vacancy rates in health regions
 - Number of Aboriginal students graduating in region and number employed by region
- Return on investment:
 - Collaboration and leverage to improve connectivity
 - Pre/post service delivery in health regions with RP
 - Health regions develop measures of cases
- Return on engagement
 - Social financing
 - Endpoints
 - Partnerships
 - Individual and family savings related to travel
- Quality Assurance
 - Access
 - Recruitment to health sciences education
 - Satisfaction with use of RP
 - Types of applications using RP

It is well known that health disparities exist within northern Saskatchewan starting with significant differences in social determinants of health¹⁰. Strategies aimed at improving health and health services in Canada's north have been recognized as needing a "reorientation towards

circumpolar partnerships” (p. 209)¹¹ which moves away from the traditional north-south design and service delivery models. Figuring out best practices within a circumpolar context will provide new insights to complex problems. These problems that are inclusive of health disparities for Indigenous populations, concurrent analyses of social determinants impacting health system strategies and economic outcomes that may be related to differences in health expenditures by remote regions on a more global yet contextually relevant population base.¹¹ The first step in designing a quality assessment that is inclusive of northern jurisdictions is to develop an understanding of the context within which a quality improvement strategy is to be applied and the capacity to meet population needs.

Team 3 cautioned that while Information Communication Technologies are often viewed as providing the solution for e-Health interventions, the regional disparities and connectivity challenges between existing yet disparate systems [i.e., health, education] and rural and remote accessibility can present significant challenges within regions and by communities. Sustainability of implementing an e-Health initiative within a rural or remote community requires innovative thinking and collaboration to support educational, cultural, health and socio-economic benefits of the people¹¹

Teams 4 & 5 made specific recommendations for developing a knowledge mobilization strategy that was broad enough to encompass the learning needs of involved health professions, health science educators, health regions, governments and local communities. Creating *pathways of knowing* recognizes that there are multiple communications and knowledge exchange strategies necessary to prepare the people and environment for successful implementation of remote presence technology. To be strategic, a communications strategy to position the innovative nature of the work being done and to support the education of the people who will be affected by the implementation of the RP is critical to successfully achieve the full benefit of the investment in the technology. The University of Saskatchewan has been clear that the RP is shared with the community and should be used to its full potential when not in the classroom. Principles in creating the strategy would include:

- Knowing the audience
- Having a local champion
- Creating the language you need champions to use to describe the innovation of RP
- What is the language that people need to know
- Demonstrating the shared resource – know where focus, emphasis should be positioned
- Providing written material that is relevant to the audience:
 - Talking points
 - Briefing notes
 - News releases
 - Media events
 - Advetorials
 - Technical reports

- Visual aids – video, podcast
- Website
- Pictures from the local area where audience is familiar
- Demonstrating success: for example students’ stories of the program to showcase “growing from within”

Objective 5 further outlines the academic aspects of the pathways.

Outcome of Objective 4 – Met

See Diagram of Framework depicted in Figure 2, Appendix E

Objective 5: Develop a framework for a series of discussion papers, using remote presence as the model,

The results of the small group sessions were collated as a beginning process to design a preliminary consensus research plan for remote presence technology in health science education. The following day the groups were reconvened and asked to make suggestions based on the following outline.

Phase I

Part 1: Defining the Need and the Challenge

- The state of nursing workforce in remote regions
- The state of remote regions to provide for nursing education
- Health care realities in remote regions

Part 2: Defining the Opportunity

- Technologies for remote nursing practice and nursing education
- The state of medical technologies and support services in remote regions
- The integration (or non-integration) of advanced technologies and nursing training

Phase II

Part 1: Remote Presence in Action

- Initial attempts at remote presence nursing and nursing education
- Remote Presence Nursing , a technological assessment
- Remote Presence Nursing, a professional evaluation

- Remote Presence Nursing, a patient-based evaluation

Part 2: The Implications of Remote Presence Nursing

- Professional issues raised by Remote Presence Nursing
- Financial and technological issues raised by Remote Presence Nursing
- Public policy questions raised by Remote Presence Nursing
- Pedagogical and training questions raised by Remote Presence Nursing

Phase III

Part 1: Evaluation and Outcomes (3 year time frame)

- Impact on the nursing profession
- Impact on medical services and health care delivery
- Impact on patient outcomes

Part 2: Future Prospects

- The technological revolution and the future of remote nursing
- The technological revolution and the future of nursing education for remote regions
- Technology, nursing and the future of health care delivery

Teams were asked to map out a strategy for the research framework with specific recommendations for going forward.

- Amendments and agreement on going forward
- Assignment of a project lead for each Phase and Part, however finally constructed
- Identification of three country team for each Phase and Part
- Three month report back from Project leaders on timing, amendments, resource needs and other questions
- Identification of specific written outcomes for each Phase and Part (articles, books, edited collections)
- Identification of funding sources to support further research and implementation
- Monthly video-conference/webinar, rotating through the various groups, with updates and preliminary assessments
- Annual meetings in each of the next three years, focused on the presentation of completed or near completed draft materials.

At the time of the Forum, the University of Saskatchewan, College of Nursing and the University of Cincinnati were the only sites using RP for teaching nursing students. It was thought to be somewhat premature to move forward with detailed recommendation until the other sites have their RP technology operational. Both the UERM and NEFU will have RP-Xpress implemented within 2014 as part of the Summer Institute project. The three Deans were asked to take the lead

to prioritizing the phases and plans. All participants will share funding opportunities that may occur within their jurisdictions and that provide for international collaboration. The Deans will meet in Fall, 2014 or early Spring, 2015.

Outcome of Objective 5 – Partially Met:

- **Leaders and potential plans for next steps determined.**
- **University of Saskatchewan will take the lead in preparing publications for:**
 - **Phase I-Part 1 – Dr Lois Berry, Lead**
 - **Phase I-Part 2 – Dr Lorna Butler, Lead.**

Objective 6

6) Explore the feasibility of extending the remote presence technology to connect with mobile communications such as eHealth and mHealth opportunities for individual and community based initiatives to address health promotion and chronic disease management within a global context.

Outcome of Objective 6 – Not Met: timing premature

Given the innovation that was evolving with the implementation of the RP, it was determined that timing was premature to link with other applications. Once the RP technology is operational among the first three universities, this objective may be led independently at a site that has more opportunity for such an initiative.

Concluding Remarks

The team recognizes that the concept of remote presence telementoring (robotics) is not easy to visualize or interpret within the context of nursing education. We thought the students could provide a comprehensive explanation. The link below connects you to our video which we hope portrays the spirit of the people of Saskatchewan who have invested greatly in our northern nursing program and embraced remote presence.

<http://www.usask.ca/nursing/remote/index.php>

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APPENDIX A

Explore

College of Nursing and
International Centre for Northern Governance and Development



UNIVERSITY OF
SASKATCHEWAN



Remote Presence Forum

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2014

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International Centre for Northern
Governance and Development



UNIVERSITY OF
SASKATCHEWAN



CIHR IRSC



Saskatchewan
Health Research
FOUNDATION

Fitzhenry Family Foundation

Welcome to Saskatoon

The University of Saskatchewan, College of Nursing is honoured to welcome this outstanding delegation of global leaders in remote presence telementoring. Four countries are sharing their expertise: Canada, United States, Philippines and Russia. The innovative thinking and actions that each person contributes to this new and emerging area of health technology is revolutionary. Individually and collectively we are changing peoples' lives. This Forum is dedicated to building a network of scholarship that can parallel and support technological advances and disseminate knowledge around the use of technology in health science education and health care delivery.

Nursing's Learn Where You Live program has invested in distributed learning in northern locations by delivering the full BSN program to the northern Saskatchewan communities of Ile-a-la-Crosse and La Ronge. The use of remote presence telementoring for health education in northern communities addresses two major challenges to the system. First, the acute shortage of Aboriginal human health resources, and second the use of remote presence telementoring and other technologies during nursing education to enhance its application in clinical practice after graduation; a hypothesis that will be explored in greater depth during the Forum.

Saskatchewan is well situated to be a global leader in using remote presence technology both in health sciences education and in rural and remote clinical practice. By bringing together researchers, educators, technology experts and northern stakeholders who are using or have invested resources into taking advantage of this technology, we hope to create a global network of innovation leaders who are willing to advance an interprofessional application of remote presence technology in the health sciences.

Thank you for the willingness to share your knowledge and experience. You are *"simply incredible"*!



Lorna Butler, RN. PhD
Forum Chair

table of contents

acknowledgements	inside cover
welcome letter	1
table of contents	2
objectives of the forum	3
agenda	
day one	4
day two	5
day three	6
list of delegates	7 - 8
notes	9 -13



Image courtesy Saunders Evans Architects Inc.

objectives of the Forum

The specific objectives for the Forum include:

1. Create a Canadian-led network of innovation leaders to advance the science and knowledge dissemination of the field. The extension and application of remote presence is evolving. A unique opportunity exists to contribute within and across health specialties and health sciences applications. No established, collaborative network presently exists in this field.
2. Engage participants in consensus building on research questions generated as the remote presence platform emerges across Canada and extends globally. The implementation of this type of technology has the potential to transform the delivery of health education and practice. There is an emergent need to explore implications for health practice, education and policy as practice changes are beginning to occur.
3. Construct a model for extending the teaching and training programs that are being realized within the academic health sciences to address the rural, remote and northern health care. The inclusion of knowledge users is essential for community development and engagement in health education and service delivery.
4. Facilitate dialogue between northern and Aboriginal stakeholders (primarily health administrators) and researchers to ensure research and advances in the uses of the telementoring and telemedical technology is practical and effective from an end-user perspective; and to ensure northern stakeholders have an opportunity to inform and contribute to research questions.
5. Develop a framework for a series of discussion papers, using remote presence as the model, on learner centeredness, community acceptance, feasibility, and funding of telerobotics in health for community leaders, First Nations community Bands and Councils, administrators, funding bodies and policy makers.
6. Explore the feasibility of extending the remote presence technology to connect with mobile communications such as eHealth and mHealth opportunities for individual and community based initiatives to address health promotion and chronic disease management within a global context.

AGENDA

Start	End		DAY ONE
Monday, March 3, 2014			
1600		Bus pick up at hotel Location - Front Lobby, Delta Bessborough Hotel	
1615	1715	Welcome Reception Location - President's House, University of Saskatchewan	
1715	1730	Bus to University Club	
1730	1745	Opening of Forum <i>Greetings: Dr. Lorna Butler, International Centre for Northern Governance and Development, University of Saskatchewan</i> <i>Introductions - showcase countries</i> Location - Fireplace Room, University Club	
1745		Opening Panel – Session 1: Local / Global Experiences <i>Moderator: Dr. Greg Poelzer, Executive Chair, International Centre for Northern Governance and Development, University of Saskatchewan</i>	
1745	1800	The Story of Nain RP - 7 Remote Presence in Labrador <i>Speaker: Pat Crotty, Nain Health Clinic</i>	
1800	1815	Telementoring in Nursing <i>Speaker: Dr. Debi Sampsel, University of Cincinnati</i>	
1815	1830	Teaching via Remote Presence: Lessons Learned <i>Speaker: Dr. Lois Berry, College of Nursing, University of Saskatchewan</i>	
1830	1845	Bringing Remote Presence Technology to North Eastern Siberia <i>Speaker: Dr. Nikolai Semenovitch Diachkovskii, Northeastern Federal University, Yakutsk, Russia</i>	
1845	1900	Pediatric Oral Health Program <i>Speaker: Dr. Alyssa Hayes & Dr. Jill Bally, University of Saskatchewan</i>	
1900	2030	DINNER <i>Keynote Speaker: Hon Rob Norris, Minister of Advanced Education</i> <i>Introductions - Dr. Hope Bilinski, College of Nursing, University of Saskatchewan</i> <i>(Working Groups announced during dinner)</i> Location - University Club, University of Saskatchewan	
	2030	ADJOURNMENT - BUS BACK TO HOTEL	

*Disclaimer: Speakers and times are subject to change.

Start	End						
DAY TWO							
Tuesday, March 4, 2014							
0800		Bus pick up at hotel Location - Front Lobby, Delta Bessborough Hotel					
0815	0900	BREAKFAST - Location - Marquis Hall, University of Saskatchewan					
0900	0905	Setting the Context for the Forum <i>Dr. Heather Exner-Pirot, College of Nursing, University of Saskatchewan</i>					
0905	0915	Panel – Session 2: Community/End User Perspectives on Remote Health and Technology <i>Moderator: Duane Favel, Mayor, Ile a la Crosse</i>					
0915	0935	The Arctic Human Health Experts Working Group and Challenges and Priorities in Improving Circumpolar Health <i>Speaker: Bridget Larocque, former Executive Director, Gwich'in Council, President of Inuvik Metis Council</i>					
0935	0950	How e-Health fits in with Northern Health Promotion <i>Speaker: Dr. James Irvine, Medical Health Officer for Athabasca, Keewatin Yatthé and Mamawetan Churchill River Health Authorities</i>					
0950	1010	Adopting Technology in Remote First Nations Health Services <i>Speakers: Charles Bighead, e-Health Advisor & Linda Nosbush, Capacity Development Advisor, Northern Inter-Tribal Health Authority</i>					
1010	1030	<i>Interactive Dialogue with Presenters</i>					
1030	1100	COFFEE BREAK					
1100	1130	Session 3: Future Innovation Future Innovation and Practice in Remote Presence Telehealth <i>Speaker: Dr. Yulun Wang, InTouch Health, Santa Barbara California</i>					
1130	1200	Session 4: Creating a Framework for Research & Scholarship: A Canadian Led Research Consortium for Remote Presence Telementoring <i>Speaker: Dr. Lorna Butler, International Centre for Northern Governance and Development, University of Saskatchewan</i>					
1200	1300	LUNCH					
1300	1530	Session 4: Creating a Framework for Research & Scholarship					
		<table><tr><td>Team 1 Remote Presence for Nursing Education: A Global Initiative <i>Co-Leader: Dr. L. Berry, U of S & Dr. W. Atos, UREM</i></td><td>Team 2 Being in Two Places at the Same Time: Remote Presence in Health Service Delivery <i>Co-Leader: Dr. M. E. Andrews & Dr. V. McKinney, U of S</i></td><td>Team 3 Building a Technology Infrastructure for Rural and Remote Health <i>Co-Leader: M. Tomtene & Dr. P. Woods, U of S</i></td><td>Team 4 Creating an International Network to Advance Scholarship in Remote Presence Telementoring <i>Co-Leader: Dr. H. Exner-Pirot & E. Neuls, U of S</i></td><td>Team 5 Positioning Practitioners for Continuing Education Using Remote Presence Technology <i>Co-Leader: C. Jeffery, U of S & C. Roleff, Alaska</i></td></tr></table>	Team 1 Remote Presence for Nursing Education: A Global Initiative <i>Co-Leader: Dr. L. Berry, U of S & Dr. W. Atos, UREM</i>	Team 2 Being in Two Places at the Same Time: Remote Presence in Health Service Delivery <i>Co-Leader: Dr. M. E. Andrews & Dr. V. McKinney, U of S</i>	Team 3 Building a Technology Infrastructure for Rural and Remote Health <i>Co-Leader: M. Tomtene & Dr. P. Woods, U of S</i>	Team 4 Creating an International Network to Advance Scholarship in Remote Presence Telementoring <i>Co-Leader: Dr. H. Exner-Pirot & E. Neuls, U of S</i>	Team 5 Positioning Practitioners for Continuing Education Using Remote Presence Technology <i>Co-Leader: C. Jeffery, U of S & C. Roleff, Alaska</i>
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1530	1630	Session 5: Building Consensus on Questions for Research & Scholarship <i>Speaker: Dr. Ken Coates, International Centre for Northern Governance and Development, University of Saskatchewan</i>					
1630		Bus returns to Hotel University of Saskatchewan Team Leaders meet to build framework					
1700	1900	REST / ON YOUR OWN					
1900	2100	Dinner at Hotel The Importance of Developing a Local Health Professional Labour Force <i>Keynote Speaker: Thomas Sierzycki, Mayor of LaRonge</i> <i>Introductions - Carol Bullin, College of Nursing, University of Saskatchewan</i> Location - Terrace Room, Delta Bessborough Hotel					

AGENDA

Start	End		DAY THREE
Wednesday, March 5, 2014			
0800		Bus pick up at hotel Location - Front Lobby, Delta Bessborough Hotel	
0815	0900	BREAKFAST -Location - Marquis Hall, University of Saskatchewan	
0900	1100	Presenting the Emerging Framework <i>Speaker: Dr. Ken Coates, International Centre for Northern Governance and Development, University of Saskatchewan</i>	
1100	1200	Knowledge Dissemination Plan <i>Speaker: Dr. Heather Exner-Pirot, College of Nursing, University of Saskatchewan</i>	
1200	1300	LUNCH	
1230	1330	Public Forum / Lunch & Learn - How can Remote Presence solve our healthcare delivery challenges? <i>Speakers: Dr. Yulun Wang, Chairman & CEO, InTouch Health, Santa Barbara, California, USA</i> Location - Room 1130, Health Sciences Building, E-Wing, University of Saskatchewan	
	1300	Bus pick up at Marquis Location - Place Riel, University of Saskatchewan - (Return to Bessborough Hotel)	
1800		Dinner (remaining guests) - Location: TBA	

Photographs & Video:

Photographs will be taken of participants at the Remote Presence Forum for use in College of Nursing promotional materials related to the Remote Presence. If you do not want your photograph taken/used, please let the photographer know.



Photo: ©College of Nursing, U of S

list of delegates

RUSSIA

Dr Boris Vitalievich Andreev

Chief (Head) Physician of Republican Hospital #2,
Yakutsk, Siberia, Russia

Dr Aleksandr Fedorovich Kravchenko

Chief (Head) Physician of National Practice Centre "Phthiatriy", Yakutsk, Siberia, Russia

Dr Nikolai Semenovitch Diachkovskii

Dean, College of Nursing, Northeastern Federated University, Yakutsk, Siberia, Russia

Elena Valerievna Zakharova

Translator, Northeastern Federated University,
Yakutsk, Siberia, Russia

PHILIPPINES

Dr Wilhelmina Atos

Dean, College of Nursing, University of East Ramon Magsaysay, Quason City, Philippines

Dr Carmelita Divinagracia

Consultant for Special Concerns, University of the East Ramon Magsaysay, Memorial Medical Center, Inc., Quason City, Philippines

UNITED STATES OF AMERICA

Arturo Muslera

Business Director, Canada, Latin America and The Caribbean, InTouch Health, Santa Barbara, California, USA

Cindy Roleff

AFHCAN Lead Telehealth Coordinator, Alaska Native Tribal Health Consortium, Anchorage, Alaska, USA

Dr Debi Sampsel

Chief Officer of Innovation & Entrepreneurship, University of Cincinnati College of Nursing, Cincinnati, USA

Dr Yulun Wang

Chairman & CEO, InTouch Health, Santa Barbara, California, USA

ENGLAND

Svetlana Karpova

Business Development Director, Europe, Middle East, and Africa, InTouch Health, London, England

CANADA

Melanie Beal

Director of Primary Care, Mamawetan Churchill River Regional Health Authority, LaRonge, SK, Canada

Terri Belcourt

Nursing Advisor, Member Relations, Saskatchewan Registered Nurses Association, Regina, SK, Canada

Charles Bighead

e-Health Advisor, Northern Intertribal Health Authority, Prince Albert, SK, Canada

Genevieve Chartrand

Director Acute Care Services, Mamawetan Churchill River Regional Health Authority, LaRonge, SK, Canada

Pat Crotty

Head Nurse, Nain Health Centre, Nain, Labrador, Canada

Lynn Digney Davis

Chief Nursing Officer, Nursing Secretariat, Ministry of Health, Government of Saskatchewan, Regina, SK, Canada

Duane Favel

Mayor, Ile a la Crosse, SK, Canada

Karla Hardcastle

Manager University Programming, Northlands College, LaRonge, SK, Canada

Dr James Irvine

Medical Health Officer, Athabasca, Keewatin Yatthe, and Mamawetan Churchill River Health Authorities, LaRonge, SK, Canada

Michelle Lanteigne

Clinical Nurse Educator, Keewatin Yatthe Regional Health Authority, Ile a la Crosse, SK, Canada

Diana MacKay

Director, Saskatchewan Institute, The Conference Board of Canada

Linda Nosbush

Capacity Development Advisor, Northern Intertribal Health Authority, Prince Albert, SK, Canada

Thomas Sierzycki

Mayor, LaRonge, SK, Canada

list of delegates

UNIVERSITY OF SASKATCHEWAN

Dr Mary Ellen Andrews

Acting Associate Dean, College of Nursing

Dr Jill Bally

Assistant Professor, College of Nursing, U of S

Dr Lois Berry

Acting Dean, College of Nursing

Dr Hope Bilinski

Associate Dean Central
Saskatchewan Saskatoon Campus and
Academic Health Sciences, College of
Nursing

Carol Bullin

Assistant Professor, College of Nursing

Kylie Dietrick

Communications Officer, College of
Nursing

Dr Heather Exner-Pirot

Strategist for Outreach and Indigenous
Engagement, College of Nursing

Cathy Jeffery

Director, CEDN, College of Nursing

Anna Pacik

College Relations Officer, College of
Nursing

Robin Thurmeier

Research Facilitator, College of Nursing

Mark Tomtene

Director of Information and
Communication Technologies, College of
Nursing

Dr Phil Woods

Associate Dean Research and Global
Initiatives, College of Nursing

Dr Lorna Butler

Professor, ICNGD

Dr Ken Coates

Director, International Centre for
Northern Governance & Development
(ICNGD)

Emmy Neuls

International Project Officer, ICNGD

Dr Greg Poelzer

Executive Chair, ICNGD

Dr Veronica McKinney

Director, Northern Medical Services,
College of Medicine

Bridget Larocque

former Executive Director, Gwich'in
Council, President of Inuvik Metis Council

Dr Alyssa Hayes

Assistant Professor, College of Dentistry



Photo: ©College of Nursing, U of S



NOTES:

[illegible]

APPENDIX B



UNIVERSITY OF SASKATCHEWAN

The College of Nursing and the International Centre for Northern Governance and Development, University of Saskatchewan welcome

Dr Yulun Wang

Chairman & CEO, InTouch Health, Santa Barbara, California, USA

Dr. Yulun Wang launched his career at the intersection of healthcare and technology with the founding of Computer Motion, Inc. and the invention of AESOP, the first FDA-cleared surgical robot. Under his leadership, Computer Motion went public in 1997 and later merged with Intuitive Surgical to forge the multi-billion dollar surgical robotics industry. In 2002, Dr. Wang founded InTouch Health, which has been recognized as one of the fastest growing healthcare and technology companies by the likes of Inc. 500 and Deloitte 500. Dr. Wang has received multiple entrepreneurship and leadership awards and was elected to the prestigious ranks of the National Academy of Engineering in 2011.

Countries around the world are struggling with their ability to provide quality healthcare to all of their citizens at an affordable cost.

Dr. Wang will discuss and demonstrate how technologies like Remote Presence can help manage these challenges.

How can Remote Presence solve our healthcare delivery challenges?

12:30 - 1:30 p.m., March 5, 2014

E-Wing Lecture Theatre - Room 1130

Health Sciences E-Wing, U of S campus

Free Admission



International Centre for Northern
Governance and Development



UNIVERSITY OF
SASKATCHEWAN

College of Nursing

Dr. Wang's public lecture presentation is part of the Remote Presence Forum, March 3 - 5, 2014., presented by the College of Nursing and the International Centre for Northern Governance and Development, University of Saskatchewan.

www.usask.ca

TECHNOLOGY

U of S hosts conference on health care robots

JONATHAN CHARLTON
THE STARPHOENIX

The future of health care is here, and it looks like Rosie the Robot.

This week the University of Saskatchewan hosted a conference on using robots to educate nurses and improve health care in northern and rural areas.

Delegates came from Siberia, the U.S. and the Philippines — areas with some of the same health issues present in northern communities in Saskatchewan, such as tuberculosis and diabetes. They shared their expertise, and provided a better comparison with northern Saskatchewan than Saskatoon, forum chair and dean of nursing Lorna Butler said.

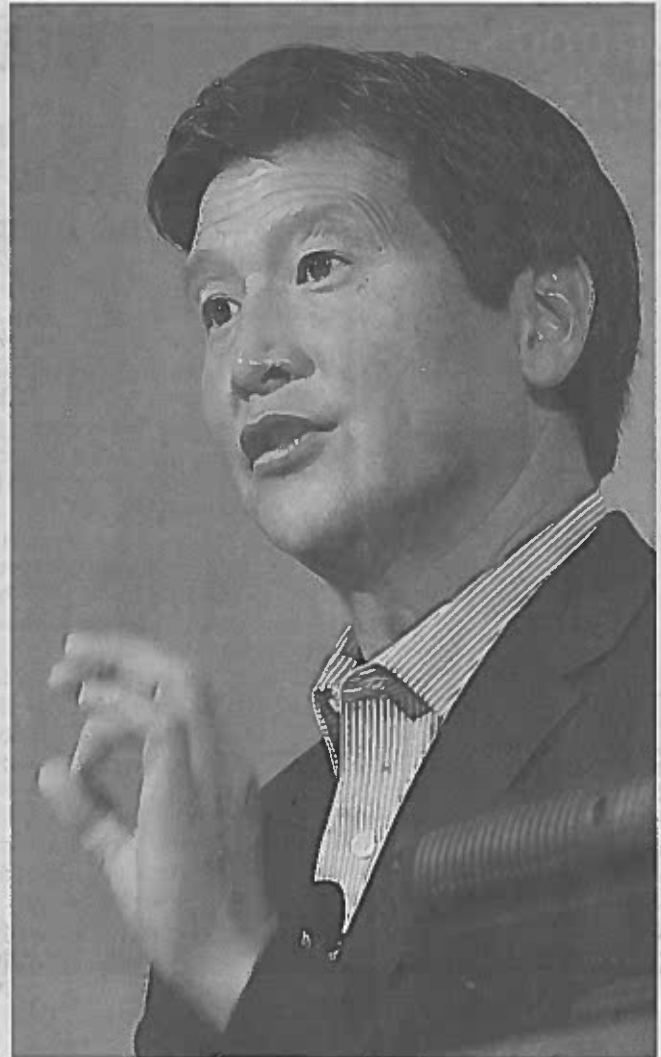
**“WE REALIZED
WE’RE TEACHING
FROM A
SOUTHERN
PERSPECTIVE.”**

LORNA BUTLER

“As we were teaching students in northern Saskatchewan, we realized we’re teaching from a southern perspective,” Butler said.

In Saskatchewan, robots are stationed at La Ronge and Ile a la Crosse. About a metre and a half tall, they have a computer monitor for a head, allowing an instructor to communicate and interact with nursing students and patients. The robots even accept peripherals such as a stethoscope.

It’s a key technology for creating a local, sustainable health care workforce in



GREG PENDER/The StarPhoenix

Yulun Wang, CEO of InTouch Health, speaks about using robotics in health care at the University of Saskatchewan on Wednesday.

those communities, Butler said. Before, northern registered nurses were a “devastated workforce,” coming and going with no clear employment plan.

The university hopes to put another robot in Yorkton in the fall, and is expanding teaching to include dental and eye care.

The robots will also be used more to provide care to patients.

“If you have that piece of equipment, it should never be sitting idle,” Butler said.

The final speaker of the conference was Yulun Wang, the CEO of InTouch Health, a company that operates various models of robots and video screens in 1,000 hospitals, mostly in the U.S.

Each system, including cloud-based data services, costs between \$2,000 to \$6,000 per month.

APPENDIX C



PLEASE
JOIN US

COLLEGE OF NURSING AND INTERNATIONAL CENTRE FOR
NORTHERN GOVERNANCE AND DEVELOPMENT

we invite you to join us at a welcome reception
in celebration of the

Remote Presence Forum

and launch of the
College of Nursing's
Remote Presence promotional video:

Undergraduate Nursing Education & Remote Presence Telementoring

Monday, March 3, 2014
4:15 - 5:15 PM

President's House
University of Saskatchewan

Dress: Business attire
Transportation Provided: Bus leaving Bessborough Hotel lobby at 16:00

APPENDIX D

Assigned Questions for Groups

to Build Framework

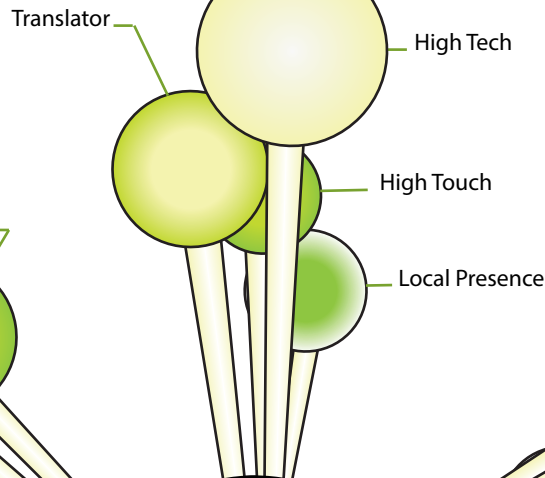
- To test the hypothesis that the use of remote presence telementoring and other technologies during nursing education will enhance the use of telehealth and telementoring in clinical practice after graduation specific indicators of success will need to be measured. **Identify the most critical factors that our model should address.** [Team 1]
- Expanding the application of RP innovations can make an important contribution to improved education and health service delivery. **What would a comparative perspective look like to assess evidence that building capacity with health human resources educated in the use of RP leads to a high quality, knowledge intensive environment for recruitment and retention of health professionals** to rural, remote and northern regions. [Team 2]
- Outline processes that would describe and compare jurisdictional conditions within which our RP system are presently situated, using both a north-south and circumpolar perspective to **assess return on engagement for communities and organizational level quality outcomes for implementing new technologies to support education and service delivery** [Team 3].
- RP innovations have the potential to inform a pathway for rural, remote and northern health equity from education, service delivery and community-based, primary health care. Our Forum has participants from across the globe sharing similar cultural and geographic challenges in rural, remote and northern communities. As part of an overarching goal to improve health services and outcomes for these communities, **identify and prioritize joint inter-country, interprofessional research initiatives that would populate the pathway with evidence for best practices and policy decisions.** [Team 4]
- **What would a knowledge mobilization strategy include at a local, national/state and circumpolar level to inform and translate the outcome of this Forum** for policy level decisions critical to mobilizing communities, health regions, government- both federal (state) and provincial on the implementation and ongoing investment for using RP in education. [Team 5]

Team Members for Group Sessions

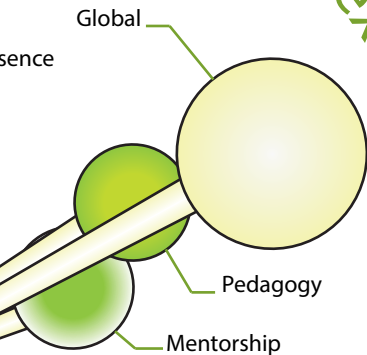
Team 1	Team 2	Team 3	Team 4	Team 5
Remote Presence for Nursing Education: A Global Initiative	Being in Two Places at the Same Time: Remote Presence in Health Service Delivery	Building a Technology Infrastructure for Rural and Remote Health	Creating a National Network to Advance Scholarship in Remote Presence Telementoring	Positioning Practitioners for Continuing Education Using Remote Presence Technology
Co-Leader: Dr. L.Berry: <i>Uof S</i> ; Dr W. Atos, <i>UREM</i>	Co-Leader: Dr. M.E.Andrews & Dr V. McKinney	Co-Leaders: Mark Tomtene & Dr P. Woods <i>Uof S</i>	Co-Leader: Dr. H Exner-Pirot, & E. Neuls, <i>U of S</i>	Co-Leader: Cathy Jeffery <i>Uof S</i> & C. Roloff <i>Alaska</i>
Nikoli Semenovich Diachkovskii Deb Sampsel Duane Favel Carmelita Divinagracia Anna Pacik Greg Poelzer Elena - Interpreter	Alexandr Fedorovich Kravshenko Svetlana Karpova Pat Crotty Arturo Muslera Carol Bullin Karla Hardcastle Alyssa Hayes (not confirmed) [Needs Interpreter]	Boris Vitalievich Andreev Yulun Wang Charles Bighead Hope Bilinski Bridget LaRocque James Irvine [Needs Interpreter]	Thomas Sierzycki Lynn Digney-Davis Robin Thurmeier Janet McCabe Diana MacKay Jill Bally (not confirmed)	Michelle Lanteigne Melanie Beal Genevieve Chartrand Teri Belcourt Linda Nosbush

APPENDIX E

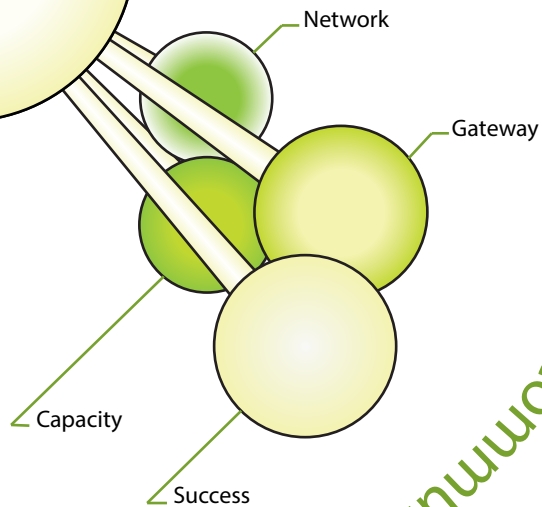
Relationship



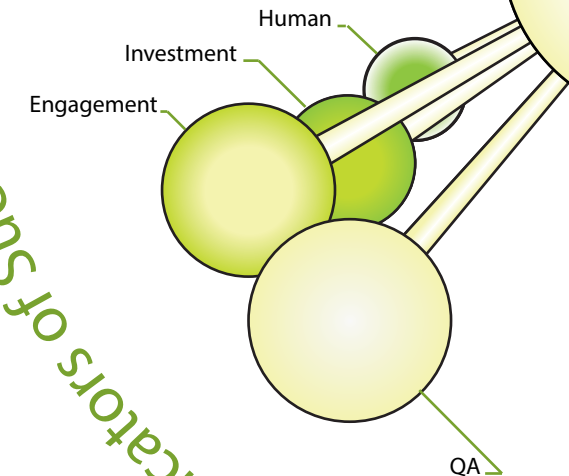
Context of Learning



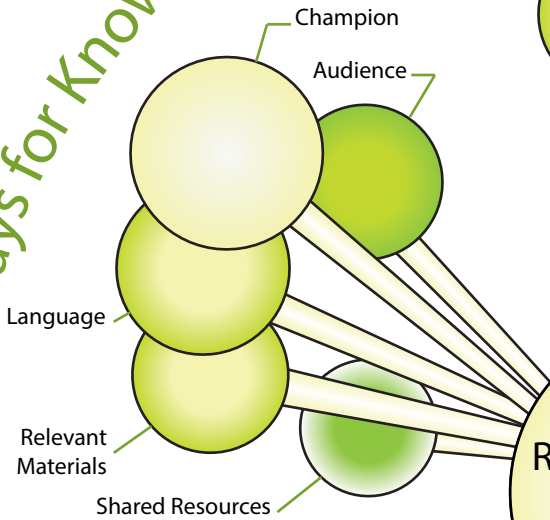
Connecting Community Champions



Indicators of Success



Pathways for Knowing



Remote Presence Technology