

Mapping use of 'Educative-Telemedicine' in Latin-America

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Working Document

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CAMPUS VIRTUAL GARRAHAN HOSPITAL - Argentina

RUTE, Telemedicine University Network - Brazil

CENTRO DE EDUCACION VIRTUAL Y SIMULACION E-SALUD, FUNDACION SANTA FE DE BOGOTA - Colombia

UNIVERSIDAD VIRTUAL DE SALUD DE CUBA - Cuba

TULASALUD - Guatemala

CENETEC - Mexico

PROGRAMA NACIONAL DE TELEMEDICINA - Panama

Mapping use of 'Educative-Telemedicine' in Latin America

1. Summary

- This document describes the development of two primary deliverables for PAHO's Knowledge Management and Communications Unit that included a rapid web-based environmental scan (mapping) of the use of 'educative-telemedicine'¹ in Latin America and the Caribbean (LAC).
- The goals of this web-based mapping project are twofold: to support the development of a workshop that requires an inventory of active tele-education programs or initiatives in LAC and; to assist PAHO's KMC department with evidence to support new 'educative-telemedicine' programs in the region.
- We believe this 'educative-telemedicine' mapping project fulfills the goals of PAHO's KMC in the selection of the countries and initiatives that will be invited to the workshop in Washington DC in October 22-24, 2012.
- The database of countries and initiatives generated by this project can assist PAHO to complement and expand the scope of information available at <http://www.campusvirtualsp.org> (the virtual classroom and virtual library).
- 'Educative telemedicine' in LAC has an important role to play in addressing health care professional isolation, which is experienced by rural and remote professionals.
- As in other regions of the world, 'educative telemedicine' in LAC improves health care access and quality.

¹ This report uses 'educative-telemedicine' interchangeably with tele-education; it is defined as the electronic transmission of medical or health information, either for the training of health professionals or to assist members of the public to self-manage their health.

- This mapping found 159 'educative telemedicine' programs and initiatives that are providing support to health care professionals. Brazil is leading the region with the largest number of institutions and programs (n=49) closely followed by Colombia (n=45).
- The design of 'educative telemedicine' programs in Argentina, Brazil, Chile, Colombia, Cuba, Honduras, Guatemala, Mexico and Panama, assisted by existing and emerging technologies, is supporting networks of health professionals to improve access, reduce isolation and facilitate the integration of care across silos and geographical regions.
- Tele-education programs in LAC are thematically varied between medical specialties, public health, and child and maternal health. They also seem to be deployed so that they can evolve and respond in real-time to the most prevalent public health problems.

4. Findings

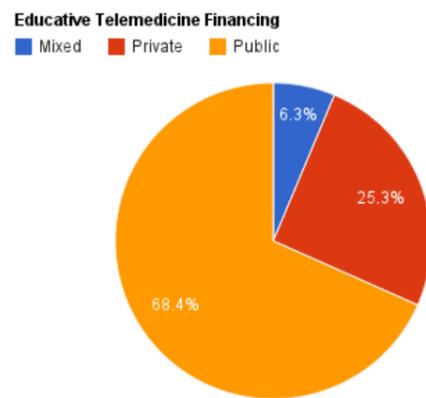
All details of the mapping results are available on a 'live' table on Google document where users can explore all educational telemedicine programs by region. Below we summarized the most important availability, accessibility and methodological characteristics of tele-health education initiatives in Latin America. A detailed summary of the most salient initiatives in various countries is available on **Annex D**.

Availability

- Our mapping exercise found 159 tele-education initiatives in the LAC region. Brazil is leading the region with the largest number of institutions and programs (49) closely followed by Colombia (45).
- The following list displays the number of tele-education programs found by country: Argentina (14), Chile (1), Costa Rica (2), Cuba (6), Ecuador (8), Guatemala (1), México (11), Panamá (1), Paraguay (2), Peru (1), Uruguay (1), Venezuela (7).
- There were 10 multinational programs; very few of these were in the Caribbean with Cuba being the most notable.



- Most of the programs are supported or financed by local governments (108), followed by private (40) and mixed private-public financing mechanisms (10).



- Our data shows that it takes an average of 6 years to establish tele-education projects.

Accessibility

- Overall, tele-education in the LAC region aims to integrate health professional teams in isolated with university establishments in order to improve the quality of health services provided.
- Depending on the size of the program tele-education sessions were typically scheduled in weekly to monthly periods of time (REDE NACIONAL DE ENSINO E PESQUISA: REDE UNIVERSITÁRIA DE TELEMEDICINA). Some programs had permanent telemedicine services (TELESALUD UNIVERSIDAD DE CALDAS).
- Our mapping shows that tele-education in LAC is supporting family and community health teams to ensure a response in real-enough time to health care emergencies.
- Central America is lead by Costa Rica (CONSEJO DE TELESALUD DE LA GERENCIA MÉDICA DE LA CAJA COSTARRICENSE DE SEGURO SOCIAL), Guatemala (TULASALUD) and Panama (PROGRAMA NACIONAL DE TELEMEDICINA) in the region to provide training to indigenous individuals and not exclusively to health professionals.

Methodologies

- One hundred and four (104) tele-education programs (out of 159) had links to an academic institution. Problem Based Learning (PBL) methodologies are used by almost a third (48) of the initiatives, either virtually or in a face-to-face simulated computer lab, to improve medical education.
- It was difficult to establish which of the tele-education programs were solely dedicated for clinical, research, assistential or educational purposes.
- The main modes of tele-education are audio, video, and computer-based - either synchronously or asynchronously. Audio-conferencing and short-wave radio are also used. Videoconferencing, or interactive television is used across the region for live visual and verbal interaction between educators and students. Conventional television is also used at the “Centro Mexicano de Educacion en Salud por Televisión” (CEMESATEL).
- The use of ‘Campus Virtual’ and Moodle (a free, open source PHP web application for producing modular internet based courses that support a modern social constructionist pedagogy) was popular among tele-education programs.
- The CAMPUS VIRTUAL HOSPITAL GARRAHAN has over 10,000 students, technicians and professionals that have completed training in various areas and disciplines in hospital family and child services.

5. Conclusions

- 'Educative telemedicine' in LAC has an important role to play in addressing the professional isolation, which is experienced by rural and remote health-care professionals.
- As in other regions of the world, 'educative telemedicine' in LAC is a useful tool to improve health care access and to reduce health disparities.
- Our mapping found 159 'educative telemedicine' programs and initiatives that are providing support to health professionals. Brazil is leading the region with the largest number of institutions and programs (49) closely followed by Colombia (45).
- The design of 'educative telemedicine' programs in Argentina, Brazil, Chile, Colombia, Cuba, Honduras, Guatemala, Mexico and Panama, assisted with existing and emerging technologies, is supporting networks of health professionals to improve access, reduce isolation and facilitate the integration of delivered care across geographical regions.
- Tele-education programs in LAC are varied in themes (medical specialties, public health, maternal and child health) and seem to be deployed so that they can evolve and respond in real-enough time to the most prevalent issues.
- Very few tele-education initiatives in LAC are aimed at the provision of health services for aboriginal communities.
- The use of 'Campus Virtual' and Moodle (a free, open source PHP web application for producing modular Internet based courses that support a modern social constructionist pedagogy) is popular.

The Way Forward

- Many opportunities exist for KMC to nourish and support 'educative-telemedicine in LAC, particularly by:
 - Automating the database created by this review and mapping 'educative telemedicine' using semantic-web technologies;
 - Expanding the scope and technical capabilities of the Campus Virtual to allow a more social-business interaction between the different 'educative telemedicine' stakeholders

1. Automate and Expand the Current Map/Database

Gaps exist in the way tele-educational programs and initiatives are described. It is recommended that additional resources from PAHO are committed to automate and expand the overall view on the use of telemedicine in educational programs. This should consist of:

- A framework for guiding future public-private partnerships for mHealth that is coordinated with the eHealth strategic framework;
- Other telemedicine programs, including privacy, security, training, and intersections with other sectors;
- Capacity building and development of a regional tele-education network;
- A map of primary stakeholders identifying key areas for public-private partnerships; and
- The development of a funding strategy for strategic partnerships

If additional resources are found, a computer script using semantic wiki technologies can help map institutions. In addition all institutions identified can be contacted by email. A standard template could be forwarded to the institution to verify the information extracted and to obtain missing information. Leaders of institutions or their assistants could receive a follow up call to confirm receipt of the email message and to obtain additional

information.

2. Expand the Virtual Campus to Enable Meaningful Collaboration for Educative Telemedicine

The world of healthcare is inherently siloed, geographically fragmented and prone to poor communication. Latin America is not the exception. Today, healthcare workers solve their problems via traditional methods that are often costly, inefficient, not contextualized, nor timely. Increasingly, more savvy healthcare workers are looking outside the system to social media, business networks and online communities of practice for answers but are challenged with privacy concerns, information overload, and sub-scale community implementations.

We recommend the expansion of 'social business' capabilities of the 'Campus Virtual' to be configured specifically for healthcare workers to more effectively collaborate and share timely, locally relevant educative telemedicine solutions. This will enable communities of educative telemedicine users in LAC to dynamically gather, share and discover the incredible wealth of know-how already existing in the Latin American telemedicine ecosystem.

Annex A: Definitions

This environmental scan used the following definitions to frame the scope of work. The first three are the focus of the review. Those thereafter were used to complement the searches.

Definition	Source
Telemedicine is the use of telecommunications to diagnose and treat disease and ill-health.	http://www.who.int/trade/glossary/story021/en/index.html http://www.who.int/trade/glossary/story021/en/index.html
Tele-health includes surveillance, health promotion and public health functions. It is broader in definition than tele-medicine as it includes computer-assisted telecommunications to support management, surveillance, literature and access to medical knowledge.	http://www.who.int/trade/glossary/story021/en/index.html http://www.who.int/trade/glossary/story021/en/index.html
Tele-education is the transmission of medical information, either for the training of health professionals or to assist members of the public to self-manage their health (including tele-triage).	http://www.dbcde.gov.au/_data/assets/pdf_file/0019/130159/Financialandexternalityimpactsofhigh-speedbroadbandfortelehealth-311.pdf http://www.dbcde.gov.au/_data/assets/pdf_file/0019/130159/Financialandexternalityimpactsofhigh-speedbroadbandfortelehealth-311.pdf
E-health is the transfer of health resources and health care by electronic means. It	http://www.who.int/trad

<p>encompasses three main areas:</p> <ul style="list-style-type: none"> ● The delivery of health information, for health professionals and health consumers, through the Internet and telecommunications. ● Using the power of IT and e-commerce to improve public health services, e.g. through the education and training of health workers. ● The use of e-commerce and e-business practices in health systems management. 	<p>e/glossary/story021/en/index.html http://www.who.int/trade/glossary/story021/en/index.html</p>
<p>Telematics for health is a WHO composite term for both tele-medicine and tele-health, or any health-related activities carried out over distance by means of information communication technologies.</p>	<p>http://www.who.int/trade/glossary/story021/en/index.html http://www.who.int/trade/glossary/story021/en/index.html</p>
<p>Distance education or distance learning is a field of education that focuses on teaching methods and technology with the aim of delivering teaching, often on an individual basis, to students who are not physically present in a traditional educational setting such as a classroom.</p>	<p>http://en.wikipedia.org/wiki/Distance_education</p>
<p>E-learning is interactive learning through the use of electronic media. It is an innovative technique for learning that involves using text, illustrations, photos, animations and audio/visual aids.</p>	<p>www.who.int/healthacademy/media/en/HA-CourseCat-English.pdf http://www.who.int/healthacademy/media/en/HA-CourseCat-English.pdf</p>
<p>E-learning comprises all forms of electronically supported learning and teaching. The information and communication systems, whether networked learning or not, serve as specific media to implement the learning process. The term will still most likely be utilized to reference out-of-classroom and in-classroom educational experiences via technology, even as advances continue in regard to devices and curriculum. E-learning is essentially the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio.</p>	<p>http://en.wikipedia.org/wiki/Elearning</p>

Abbreviations like CBT (Computer-Based Training), IBT (Internet-Based Training) or WBT (Web-Based Training) have been used as synonyms to e-learning.	
Synchronous learning refers to a group of people learning the same things at the same time in the same place. This is the type of pedagogy practiced in most schools and undergraduate programs, but not in graduate programs. Lecture is an example of synchronous learning in a face-to-face environment and with the advent of web conferencing tools, people can learn at the same time in different places as well. For example, use of instant messaging or live chat, webinars and video conferencing allow for students and teachers to collaborate and learn in real time.	http://en.wikipedia.org/wiki/Synchronous_learning
Asynchronous learning is a student-centered teaching method that uses online learning resources to facilitate information sharing outside the constraints of time and place among a network of people.	http://en.wikipedia.org/wiki/Asynchronous_learning
Videoconferencing is the conduct of a videoconference (also known as a video conference or video-teleconference) by a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions. It has also been called 'visual collaboration' and is a type of groupware.	http://en.wikipedia.org/wiki/Video_conferencing
Streaming media is multimedia that is constantly received by and presented to an end-user while being delivered by a streaming provider. With streaming, the client browser or plug-in can start displaying the data before the entire file has been transmitted. The name refers to the delivery method of the medium rather than to the medium itself. The distinction is usually applied to media that are distributed over telecommunications networks, as most other delivery systems are either inherently streaming (e.g., radio, television) or inherently nonstreaming (e.g., books, video cassettes, audio CDs).	http://en.wikipedia.org/wiki/Media_streaming
Mobile Health (mHealth) is an area of electronic health (eHealth) and it is the provision of health services and information via mobile technologies such as mobile phones and Personal Digital Assistants (PDAs).	http://www.who.int/goe/mobile_health/en/index.html

Annex B: Web-Search Strategies

English	Spanish	Portuguese
"Telemedicine" OR "Telehealth" OR "Tele-medicine" OR "Tele-health"	"Telemedicina" OR "telesalud" OR "tele-medicina" OR "tele-salud"	"Telemedicina" OR "tele-Medicina" OR "telesáude" OR "tele-Saúde"
Tele-education	"Tele-educacion" OR "tele-enseñanza" OR "tele-capacitacion" OR "tele-formacion" OR "eLearning"	"Tele-educação" OR "educação à distância" OR "tele-formação" OR "eLearning"
Public Health, Health, Health Promotion, Preventive Medicine, Community Health	"Salud publica" OR "Servicios Sanitarios" OR "promocion en salud" OR "prevencion de la salud" OR "salud preventiva" OR "prevencion en salud" OR "salud comunitaria"	"Saúde pública" OR "Serviços de Saúde" OR "promoção da saúde" OR "prevenção da saúde" OR "saúde preventiva" OR "prevenção da saúde" OR "saúde comunitária"

Annex C: Assessment Criteria + Country Focus

- 1 Whenever possible the following information was extracted: RSS feeds, news (press releases, newspaper mentions, social media), contact person's email, organization leader or director, goals of program, time of operation or date of inception, educational scope (services), frequency of sessions (monthly or yearly), population it serves, technology/platform used, staffing, outcomes, pedagogical strategy and or list of training materials, metrics or key indicators, relevant conclusions, funding (pilot, ongoing program), partnerships, norms, standards, and guidelines (interoperability and enterprise architecture, privacy and security, etc.)
- 2 An effort to describe at least one program from each of the Latin American countries (listed below) though emphasis was placed on the countries in bold:" Antigua and Barbuda, **Argentina**, Bahamas, Barbados, Belize, Bolivia, **Brazil**, **Chile**, **Colombia**, Costa Rica, **Cuba**, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, **Honduras**, Jamaica, **Mexico**, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Saint Lucia, St. Vincent and the Grenadines, St. Kitts and Nevis, Suriname, Trinidad and Tobago, Uruguay, and Venezuela.
- 3 We attempted to identify: coverage, training, regional efforts already in place to develop telemedicine educational programs, methodologies, standards, and metrics.
- 4 If available, we identified national stakeholder groups that can serve as local and regional forums for the exchange of knowledge and best practices.
- 5 We attempted to identify the critical capacity and needs, technical assistance, and training of public health professionals for future needs.

Annex D: Summary of Prominent Educative Telemedicine Initiatives in LAC

CAMPUS VIRTUAL GARRAHAN HOSPITAL - Argentina

The Virtual Campus Hospital Garrahan Pediatric Hospital aims to establish communication strategies within the community to establish an educational process based on interaction. Mediated by new technologies in a virtual space, it delivers services to benefit the integration between healthcare activities, teaching and research as a means of promoting continuing professional development of the health team. The CAMPUS VIRTUAL HOSPITAL GARRAHAN has over 10,000 students, technicians and professionals that have completed training in various areas and disciplines in hospital family and child services.

RUTE, Telemedicine University Network - Brazil

RUTE, Telemedicine University Network is an initiative of the Ministry of Science and Technology of Brazil (MCT) coordinated by RNP (National Network of Education and Research) with support from FINEP (Financier of Studies and Projects) and ABRAHUE (Association Brazilian University Hospitals). RUTE aims to establish an infrastructure for telemedicine existing in university hospitals with the promotion, and integration of existing projects to train health professionals. Telehealth Nucleus NUTES are responsible for administering the Brazilian Telehealth Network program, which includes the installation and operation of more than 100 telehealth sites in each Brazilian state. Throughout the country 1,100 telehealth sites are located in primary assistance facilities selected by municipal health officials. The network supports 2,700 family health teams spread over the country's five regions and serving more than 11 million inhabitants. The NUTES have expanded the connectivity among hospitals and, in conjunction, expanded the multicenter research and

telemedicine experiments thereb promoting integration, connectivity and dissemination of research and development activities.

CENTRO DE EDUCACION VIRTUAL Y SIMULACION E-SALUD, FUNDACION SANTA FE DE BOGOTA - Colombia

The 'Centro de Educación Virtual y Simulación - e-Salud, Fundación Santa Fe de Bogotá' is committed to improving the accessibility of the Colombian population to health services through e-Health education. The unit has a dedicated research and development team that supports and implements innovative educational programs. The centre focuses on three areas: ehealth education and virtual simulation, surgical infection, and medical education research. Its research articles have gained the recognition of the American Medical Informatics Association.

UNIVERSIDAD VIRTUAL DE SALUD DE CUBA - Cuba

The Universidad Virtual de Salud is a full-fledged virtual academic institution. The Universidad Virtual provides high quality resources across the spectrum of academic disciplines to enable people to further educate themselves. It provides concise resources that effectively illuminate a wide variety of topics, while simultaneously presenting highly valuable sources of information. It encourages the active and creative participation of academic institutions, faculty, and research assistance from the Cuban National Health System. The university mainly supports postgraduate education and clinical discussions through an active participatory methods.

TULASALUD - Guatemala

TulaSalud is an organization that emerged as an alliance between a Canadian NGO and the Ministry of Health of Guatemala. Its aim is to support vulnerable populations such as indigenous people in rural areas of the

country. TulaSalud partners with the Cobán School of Nursing and receives support from the Tula Foundation based in Canada. The organization's vision is to use information and communication technologies, including mobile technologies, to reduce maternal and infant mortality and monitor disease outbreaks in the remote highlands of Alta Verapaz. Using mobile phones, TulaSalud has been able to improve the flow of information between health professionals based in hospitals and community health workers (CHWs) in remote villages. TulaSalud is a promising program for the development and improvement of education and health of these populations.

CENETEC - Mexico

CENETEC is an independent department at the Mexican Ministry of Health that seeks to create a network of tele-education and telemedicine to increase access and quality of education for students and health professionals, particularly but not exclusive to medicine. CENETEC has a solid theoretical framework for its national and provincial systems that guarantees its implementation and operation. The program is funded through government public resources. CENETEC is geared to support the training of medical students and other practicing health professionals. Overall, CENETEC is an innovative telemedicine and tele-education government support department at the vanguard of human resource training in ehealth.

PROGRAMA NACIONAL DE TELEMEDICINA - Panama

The Programa Nacional de Telemedicina is a relatively new program, sheltered by a reasonable legal national and provincial framework. The program has private and public funding from multinational organizations. It aims to improve access and quality of education services in health and health services in rural areas. The program has endeavored to train health professionals in the management of telecommunication technologies and virtual access, to improve and expand the network of health institutions associated to this program. Implementation has been problematic in some provinces, but its positive impact on the health of the population has been evident.