

EDUCATIONAL APPROACH OF THE VIRTUAL CAMPUS FOR PUBLIC HEALTH

General considerations and pedagogical criteria for
preparing virtual education initiatives



PAHO



Pan American
Health
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AMERICAS



VIRTUAL
CAMPUS
FOR PUBLIC
HEALTH

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SUMMARY

Purpose

The purpose of this publication is to offer guidance to staff of the Pan American Health Organization (PAHO) with project management responsibilities in the Virtual Campus for Public Health (VCPH), as well as the governments, ministries, institutions, and organizations that are part of the country nodes.

Vision, mission, and principles of the Virtual Campus for Public Health

The VCPH is a strategic tool for PAHO technical cooperation. As such, it is a space for distributing, managing, and updating knowledge in public health and for strengthening the capacities and competencies of the Region's health teams. The guiding principles of its activities are consistent with PAHO's values.

Values of the Pan American Health Organization	
Equity	Striving for fairness and justice by eliminating differences that are unnecessary and avoidable.
Excellence	Achieving the highest quality in what we do.
Solidarity	Promoting shared interests and responsibilities and enabling collective efforts to achieve common goals.
Respect	Embracing the dignity and diversity of individuals, groups, and countries.
Integrity	Assuring transparent, ethical, and accountable performance.

With these values as its cornerstone, the VCPH defines its vision, mission, and the guiding principles of its activities in education and technology.

■ Vision

To serve as the virtual platform of reference for human resources training in public health in the Americas.

■ Mission

To lead strategic collaborative efforts among Member States and other partners, to promote human resources for health training, for all people in all places.

Principles

Public good	Open, quality training for health personnel, which is an inexhaustible good that benefits the entire population.
Permanent education in health	A model in which the right to lifelong education in the fullest sense converges with the transformation of health organizations.
Open and interoperable resource	Cooperative sharing of developments, data, and applications with other computer systems that multiplies opportunities for access.
Collaborative work	Promotion of work between education and health organizations through learning networks, together with the coordination of their interactions for local capacity building and better results.
Sustainability	The search for alternatives to generate resources for maintaining or increasing the availability of education at no direct cost to health workers.

Educational approach

The **educational approach** is the conceptual and methodological framework that explains, guides, and specifies educational processes and outcomes. In our case, this general framework supports training interventions in the field of public health.

The concept of permanent education in health

Permanent education in health (PEH) is education at work, through work, and for work in the field of health, with the ultimate goal of improving the health of the population. In addition to ensuring the right to lifelong education in the fullest sense, PEH is an exceptional tool for institutional change, with an impact on work processes. Its success will therefore depend on the existence of a broader institutional policy of which it is a part.

Principles of permanent education in health

1. Learning in networks: learning as a social phenomenon, and a group/collective experience.
2. Knowledge as collective construction, fruit of the interaction between content, group, and pedagogical mediation.
3. The group as an active producer of new knowledge and practices.
4. Use of the full educational potential of work situations through a reflective and dialectical process (identification, experimentation, and evaluation).
5. Identification of community health needs together with an analysis of practice issues.
6. Ongoing integration of knowledge and experience, eliminating the dichotomies between theory and practice, and between knowledge and action.
7. Use of training experiences as institutional learning.

Essential health team competencies in the information society

- Lifelong learning.
- Managing one's own learning and contributing to that of others.
- Acquiring a critical view of the universe of available information and its quality.

New contributions to the educational approach of the Virtual Campus for Public Health

- Stimulating the interest of participants and their engagement in their own learning process.
- Taking previous learning into account in the construction of new learning as a strategic starting point for the success of the process.
- Making educational activities "real" through reflection on action.

Competency-based education

The **competency-based approach** to education not only involves a change in the way of defining expected achievements in a learning process but invites innovation in teaching methodologies and practices. Competency is an integral way of acting that makes it possible to identify, interpret, discuss, and solve context-related problems appropriately and ethically while integrating learning to be, do, and know.

Required conditions for training initiatives of the Virtual Campus for Public Health

- Grounded in science.
- Inclusive.
- Accessible.

Characteristics of educational initiatives of the Virtual Campus for Public Health

The VCPH seeks to support technical cooperation activities in a virtual environment that facilitates:

- The use of different formats and modalities, with emphasis on reflective practice.
- Interaction among groups and people from different contexts and places.
- Access to reliable sources of digital information.
- Dialogue-based, multidirectional communication and learning that avoids one-way transmission.
- The creation of virtual communities for research, updating, and practice.
- Interprofessional education.

The VCPH is an educational environment with a social perspective that fosters diversity; it therefore proposes the development of **inclusive and accessible training initiatives**.

Learning and teaching in virtual environments

The VCPH considers quality virtual educational initiatives to be constructed in a **digital landscape** which, in addition to offering content, creates a meeting place that promotes critical thinking and reflective practices, fostering active learning experiences and smooth exchange between health workers and teams of instructors.

Conditions for achieving meaningful and transformative virtual education initiatives

- Flexibility in the use of time and space.
- The presence of different languages (text, visual, audio) and forms of communication.
- Spaces for synchronous and asynchronous interaction and production.
- Learning activities that promote collaboration and cooperation.

VCPH permanent education initiatives focus on **learning activities, teaching support, and interaction** among group participants. Achieving **meaningful critical learning** requires an active process that involves reflection, interaction, and production with other people.

Teaching

Teaching involves creating the conditions and opportunities for meaningful learning to take place, both in person and in virtual environments. What changes in virtual environments are the conditions under which this is possible—i.e., the times, spaces, resources, and modes of interaction are different.

In virtual environments, **teaching is an interdisciplinary effort** among content specialists, teaching and tutoring teams, educational staff specializing in virtual instructional design, and experts in multimedia and innovative technology.

Learning

Learning is a social phenomenon and has different meanings and forms depending on the context. The VCPH stimulates the creation of learning networks among actors who share practices in health in the diverse regional context.

Due to its digital architecture and available resources, the VCPH's digital environment has great potential for implementing versatile, innovative educational initiatives through the proposed educational approach.

Impact of the COVID-19 pandemic on virtual teaching and learning

The prominent place of virtual education during the COVID-19 pandemic gave standing to this modality, demolishing preconceptions that it is merely remedial or second-class education. Virtual training no longer plays baby brother to in-person training.

Educational formats of the Virtual Campus for Public Health

One of the VCPH's main goals is to improve access by the Region's health teams to the permanent education experiences it offers and increase their participation, in order to break down as many sociocultural, gender, linguistic, technological, and geographical barriers as possible. The VCPH is therefore constantly searching for new and diverse formats. The following activities are currently available:

- Courses moderated by teacher-tutors.
- Self-learning courses.
- Open educational resources.
- Virtual meetings.

Educational innovation in the Virtual Campus for Public Health

When exploring the introduction of new technologies, consideration should be given to whether they contribute to putting the VCPH's educational ideas into action or simply replicate training models grounded mainly in the transmission of information. The main trends are:

Big data and learning analytics

Measurement, collection, analysis, and preparation of reports on the data of people who use the virtual environment and their contexts, with the aim of understanding and optimizing the management of learning and the digital environment of the VCPH.

Simulation

Simulation is a valuable tool for improving the training conditions of health workers, as it offers “safe” training and updating opportunities. It is also a strategy for improving the quality of care and patient safety in health systems, as it offers the possibility of making mistakes without harming people who use the services, in addition to reducing patient discomfort and the risks inherent to learning new skills.

The acceleration and diversification of technology requires an inquisitive, complex, and critical look at emerging educational innovation initiatives, in order to analyze them and put them at the service of the VCPH's objectives—not the other way around.

Final considerations

We hope this publication will serve as a reference for PAHO staff with project management responsibilities in the VCPH.

It reviews the history and main characteristics that distinguish the VCPH's educational approach, which is consistent with the mission, vision, and principles of PAHO.

It presents the way the VCPH conceives teaching and learning in the virtual environment and, finally, describes the lines of educational innovation that the VCPH is currently studying.

This publication is not intended as an exhaustive review of the conceptual discussions surrounding virtual education or the use of technology in education. Instead, it seeks to establish the frameworks that guide the VCPH in terms of educational developments. As mentioned, educational approaches are dynamic and require periodic updating.

At the VCPH, the intention has been—and continues to be—to promote and facilitate the use of this educational ecosystem by the people in charge of technical cooperation in the different areas of the Organization. A rapid, streamlined transfer of the different forms of virtual education for the development of courses and other VCPH initiatives will only be achieved through continuous review of VCPH activities, integrating institutional mandates, different conceptual frameworks, and the cumulative experience of the work that has been done.

Knowing and disseminating the VCPH's educational approach is one more way to take advantage of education's potential for meeting public health objectives.

INTRODUCTION

The purpose of this publication is to guide staff of the Pan American Health Organization (PAHO) with project management responsibilities in the Virtual Campus for Public Health (VCPH), as well as the governments, ministries, institutions, and organizations that are part of country nodes.

This is the second edition of the educational approach of PAHO's VCPH, which is grounded in the permanent education in health (PEH) model, reflecting the opportunities and challenges of today's information society and of knowledge and education in virtual environments.

The first edition dates back to 2008 (1), when regional courses were just beginning, and it was conceived as part of the VCPH's strategic model along with its governance model. It created the foundational frameworks necessary for accepting and lending coherence to the different educational initiatives in the VCPH learning environment in a context in which virtual education platforms did not yet have an active presence in public health training. It also provided tools for the preparation and implementation of training initiatives. The publication was therefore also a pioneer in offering a conceptual and work framework for virtual education and learning in health networks and served as the basis for the discussions that enriched subsequent projects.

The 2013 update (2) reflects the experience of five years of increasing work at the regional level, and in networks with the country nodes and other institutions. This publication offers greater integration of PEH concepts and practices with information and communication technologies (ICTs).

The current edition includes the contents of these publications and the results of a consultation carried out by the Education and New Technologies Project of the Latin American Faculty of Social Sciences. As in 2008, this publication was produced synergistically with an updating of the governance model.

VCPH vision, mission, principles, and governance model: their role in technical cooperation

The VCPH is a strategic tool for PAHO technical cooperation. As such, it is a space for distributing, managing, and updating knowledge in public health and for strengthening the capacities and competencies of the Region's health teams. The values that guide its activities are consistent with PAHO values.

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Sustainability	The search for alternatives to generate resources for maintaining and/or increasing the availability of education at no direct cost to health workers.

The VCPH orients the educational model proposed by the Organization to improve workforce competencies and public health practices through the use of information and communication technologies.

VCPH educational resources are valued regionwide for being open access, freely available, and without cost to health workers and for the potential for their social, cultural, and technological adaptation to the needs and budgets of each country.

That is why the VCPH plays a leading role in developing the necessary competencies in best practice and knowledge in the field of health and, moreover, in building leadership and management capacity in the sector.

With respect to its governance model, the VCPH is a network of people, institutions, and organizations from different countries that share courses, resources, and activities with a common purpose. It is headed by the Pan American Health Organization as the specialized technical agency that follows the mandates of its Governing Bodies and represents all the countries of the Region.

The Virtual Campus operates through coordinated networks in the following nodes:

VCPH nodes	
Regional node	The integrating node that houses the educational initiatives coordinated by the main office in Washington, D.C. (United States of America).
Subregional node	Manages and coordinates projects in the Caribbean, Central America, and South America subregions.
Country node	Under the leadership of the PAHO Representative Office in each country and the national health authority, the country's classrooms offer initiatives coordinated and administered directly by country experts.

As part of this network, the country nodes are made up of local governmental and academic institutions, which, with the support of the PAHO Representative Office in the country, draft educational initiatives linked with technical cooperation at the national level.

Health worker training in programs of multilateral organizations over the past decade

Concern about training suitable qualified human resources for health who are available to meet the health needs of the population has been an essential part of global, regional, and national programs in recent decades. Training and updating for health teams are present in agendas and programs—not only from the standpoint of traditional training but also in terms of the need for continuous lifelong learning that covers different educational models in work and the health services.

Thus, we find global goals and targets for the training of human resources for health in the Sustainable Development Goals (SDG 3) adopted by the United Nations in 2015 (3); the Global Strategy on Human Resources for Health: Workforce 2030, adopted by WHO in 2016 (4); and the recommendations in the final report of the expert group of the High-Level Commission on Health Employment and Economic Growth (5), published by WHO

in 2016. Furthermore, WHO joined the initiative to develop educational processes for health professionals with the 2021 launch of its own state-of-the-art learning center: the WHO Academy (6).

At the regional level, both the Health Agenda for the Americas 2008–2017 (7) and the Sustainable Health Agenda for the Americas 2018–2030 (8), approved by the Pan American Sanitary Conference of PAHO, created a sphere of action for strengthening the management and training of health personnel. In 2014, the 53rd Directing Council of PAHO approved the Strategy for Universal Access to Health and Universal Health Coverage (9), with the goal of ensuring that all people and communities have access to comprehensive health services.

These documents provide a general framework for educational activities and emphasize the following guiding principles:

Guiding principles for lifelong education

- Transformative and of good quality.
- Includes digital technologies.
- Interprofessional.

In addition, in the past 10 years, a series of regional mandates have been adopted, with specific guidance for the human resources area that deserve mention:

Guidance on human resources for health: regional mandates 2010–2018	
2010	<i>Strategy for Health Personnel Competency Development in Primary Health Care-based Health Systems</i> (CD50.R7, 2010) (10)
2013	<i>Human Resources for Health: Increasing Access to Qualified Health Workers in Primary Health Care-based Health Systems</i> (CD52/6) (11)
2017	<i>Strategy on Human Resources for Universal Access to Health and Universal Health Coverage</i> (CSP29.R15) (12)
2018	<i>Plan of Action on Human Resources for Universal Access to Health and Universal Health Coverage 2018-2023</i> (Document CD56/10, Rev. 1) (13)

These documents all have objectives aimed at the development of permanent education policies that promote the acquisition of competencies to meet local needs with a focus on the first level of care. They also stress the importance of introducing new institutional and teaching strategies, including virtual education and the innovative use of technologies.

The document *Strategy for Health Personnel Competency Development in Primary Health Care-based Health Systems* (10) offers recommendations for the development of educational policies aimed at rethinking the role and characteristics of the entities responsible for health worker education and training.

Policies of educational institutions in the field of health (CD50/11)

- Align the strategic learning plan with the policies and priority needs of the sector.
- Create learning networks of educational institutions in the countries and coordinate their interactions.
- Generate supportive conditions and incentives for new learning initiatives.
- Produce and share open educational resources with the countries of the Region and others from outside it as global public goods.

Based on the above, the VCPH solidified its role as the promoter and leader of PAHO's virtual education processes in public health and adopted the permanent education approach. This was the foundation for a crosscutting participatory governance model based on country nodes that share resources, promoting lifelong education and contributing to better practices in health and, hence, the quality and accessibility of health services in the Region.

Countries' vision of the Virtual Campus for Public Health's educational model

In April and May 2020, a study consisting of a survey and focus groups was conducted to obtain the opinions of the main actors involved in the preparation of training initiatives and VCPH actions in the country nodes.

From its results and conclusions, a common vision emerged with respect to:

- Prioritizing the VCPH's leadership role and its strategic place in defining the educational approach to virtual education in public health and establishing technical cooperation agreements. The study participants noted the importance of the VCPH and its country nodes for the advancement, promotion, and monitoring of universal and free access to knowledge, with quality standards and the necessary flexibility to adapt them to the sociocultural and technological realities of each country.
- Evaluating the contributions of the training initiatives and open educational resources (OER)¹ that the VCPH makes available to health teams.

As to the issues that the VCPH will address and technical cooperation, the participants stressed the importance of:

- Identifying and influencing strategic issues in regional public health.
- Continuing to strengthen the network model through initiatives for capacity and competency building on common issues among country nodes.
- Promoting the creation of communities of practice.
- Continuing to support digital updating in some of the countries and at the departmental level in the Region.

¹ Open educational resources (OER) are any educational resource designed for teaching and learning that is fully available for use without the payment of royalties or licensing fees. For more information, see United Nations Educational, Scientific and Cultural Organization. A Basic Guide to Open Educational Resources (OER). Paris: UNESCO; 2015. <https://unesdoc.unesco.org/ark:/48223/pf0000215804>

There has been limited conceptualization of the educational model and it is necessary to update the “conceptual-philosophical” model and educational values that serve as the foundation on which the VCPH is built and to include new visions in educational initiatives.

To summarize, the participants observed that the VCPH is positioned as a strategic actor in permanent education at the regional and country level and within PAHO itself, and they stressed the need for its participation to ensure the continuity and promotion of the activities of the country nodes.

CHAPTER 1. Permanent education of human resources and the educational approach of the Virtual Campus for Public Health

1.1. Educational approach of the Virtual Campus for Public Health: background

An updated view of the VCPH educational approach covers conceptual integration, which will be explained further on, and it is also based on the evolution of the learning initiatives prepared since its last review in 2013. These initiatives reflect the importance that global and regional mandates attribute to team capacity and competency building; the emphasis in recent documents on the search for more inclusive alternatives to reach all profiles; the different visions of the countries; the advances in technology and telecommunications; and, finally, the unprecedented phenomenon of the COVID-19 pandemic, which revitalized technical cooperation initiatives associated with virtual education.

1.1.1. Educational approach: definition

The educational approach is the conceptual and methodological framework that explains, guides, and specifies educational processes and outcomes. In our case, this general framework supports training interventions in the field of public health.

The educational approach is not static. It is transformed and renewed over time with social changes, advances in specialized knowledge, technological advancements, and the experience gained; in the case of the VCPH, this covers some two decades (9). In some respects, it consists of cumulative changes and updates of existing processes; in others, major transformations. We begin with critical consideration of the organizational trajectory and evaluate which problems have been solved and which are considered ongoing, in order to integrate the main contributions (4).

Adopting a transformative educational approach implies knowing the organization and the context of its activities, the population it interacts with, the goals pursued, the professional profile, and the competencies it seeks to develop. It should be noted that definition of the educational approach requires constant analysis of the feasibility of implementing VCPH educational initiatives, so that they are not divorced from practice and remain simply aspirational.

The educational approach is the conceptual and methodological framework that explains, guides, and specifies educational processes and outcomes. In our case, this general framework supports training interventions in the field of public health.

1.2. The Pan American Health Organization's model for permanent education in health

The strategic objective of the PEH model adopted by PAHO is institutional change and the transformation of practices (14). Its lengthy trajectory has shown its value in supporting human resources training in the Region's health systems, and its rationale is still valid and significant (15).

The emergence of the more formal concept of permanent education dates back to the 1996 *Report to UNESCO of the International Commission on Education for the Twenty-first Century*, which defined the pillars that should help to conceive education as a permanent process throughout people's lives—permanent education that transcends the initial concept of professional recycling to attempt to meet a new need: empowering people in a society in constant change (16).

In the field of health, PAHO embraces the approach and defines it as education at work, through work, and for work, with the ultimate goal of improving the health of the population. In this way of thinking, permanent education is understood not only as the right to be educated throughout life in the fullest sense or as “technical updating for work,” but as an exceptional tool for organizational change that has an impact on work processes (17).

The pillars of this educational approach are:

Principles of permanent education in health

1. Learning in networks: learning as a social phenomenon, and as a group/collective experience.
2. Knowledge as a collective construction, fruit of the interaction between content, group, and pedagogical mediation.
3. The group as an active producer of new knowledge and practices.
4. Use of the full educational potential of work situations through a reflective and dialectic process (identification, experimentation, and evaluation).
5. Identification of community health needs together with the analysis of practice issues.
6. Ongoing integration of knowledge and experience, eliminating the dichotomies between theory and practice, and between knowledge and action.
7. Use of training experiences as institutional learning.

This approach takes into account what studies on adult learning have shown: change (learning/unlearning) comes only from the recognition of a problem or need; there must be recognition that the current way of doing things or thinking does not allow us to tackle the challenges we face. The main motivation for change, therefore, is concrete problems that cannot be solved with current or available resources. Meaningful learning starts with unease, dialogue with cumulative knowledge, and the production of new meaning (18).

The prerequisite for transformation is a sense of unease that is not allayed through discursive approaches but is the product of lived experiences and reflection on practices.

PEH is conceived as a strategy for the transformation of health practices and health organizations. Its success depends on the existence of a broader institutional policy of which it is a part, since its ultimate goal is improving access to health and the quality of care. This is not merely an academic or technical exercise; any educational program must be part of an initiative for change, with an adequate calculation of its potential

and of the set of forces that affect the intervention (17).

Finally, it is worth mentioning that the PEH educational approach is built and fueled by input from various conceptual frameworks, mainly the currents of critical (19) and constructivist (20) education, as well as adult education, social psychology, the sociology of education, collective health, and organizational analysis.

PEH is education at work, through work, and for work in the field of health, with the ultimate goal of improving the health of the population. In addition to ensuring the right to lifelong education in the fullest sense, PEH is an exceptional tool for institutional change that has an impact on work processes. Its success, therefore, depends on the existence of a broader institutional policy of which it is a part.

1.3. Educational approaches 35 years into the knowledge society

The educational approach of the VCPH designed in 2013 (11) summarized the impact of the information society (21) on educational approaches.

Impact of the information society on the educational approach of the VCPH (2013)

- Define a new conceptual framework for critical and relevant education to guide health practices in this new reality.
- Develop new cognitive and social skills for the collective construction of knowledge.
- Include information and communication technologies in formal and permanent education.
- Give a key place to networks and sharing flows among institutions, organizations, and groups.
- Integrate the practices of new generations for the construction of knowledge (new digital spaces and sources of information).

More than 35 years since the birth of the information society, globalization and digitalization have touched all areas of human endeavor, creating an even more urgent need for health teams to acquire competencies such as those mentioned below.

Essential health team competencies in the information society

- Lifelong learning.
- Managing one's own learning and contributing to that of others.
- Acquiring a critical view of the universe of available information and its quality.

1.4. The educational approach chosen by the Virtual Campus of Public Health

For 20 years, the VCPH has been supporting technical cooperation in health through educational renewal fueled by an open, decentralized, and networked campus model.

The document *Strategy for Health Personnel Competency Development in Primary Care-based Health Systems* (CD50/11) (10) aims to increase inclusion and access to permanent education through information and communication technologies (ICTs):

Information and communication technologies “facilitate the global dissemination and democratization of knowledge (...) overcoming traditional barriers of time and distance. Knowledge and sharing flows circulate between formal and informal venues, in which everyone contributes and everyone learns in an orderly, but non-hierarchical manner.”

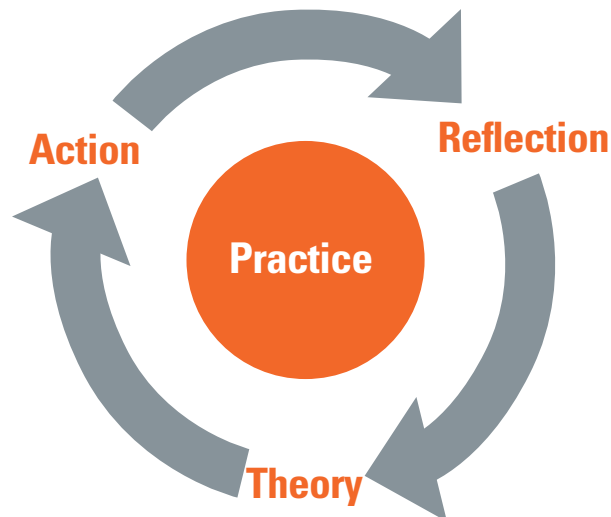
Throughout these years of work, the VCPH has made conceptual contributions to teaching and learning processes derived mainly from constructivist theory (22) and reflective practices (23) that buttress the initial PEH concept. They include:

New contributions to the VCPH educational approach

- Stimulating the interest of participants and achieving their engagement in their own learning process.
- Taking previous learning into account in the construction of new learning as a strategic starting point for the success of the process.
- Making educational activities “real” through reflection on action.

According to Donald Schön (23), reflection on action and the back-and-forth of “think-act-think” helps to dissipate the dichotomies between theory and practice, and between knowledge and action.

Figure 1. Dynamics of reflective practice



For the VCPH, these new contributions imply further emphasis on the centrality of the health team in its learning processes, and orientation toward a teaching model focused on the learner instead of the teacher, where the teacher’s role is basically that of a learning facilitator.

Finally, in its approach, the VCPH integrated the contributions of competency-based education, understood not only as a change in the way expected achievements in a learning process are defined, but as a redefinition of teaching and evaluation methods, as well as teaching practices.

Competency-based education has its roots in economics, where social actors were particularly concerned about worker qualification and meeting the needs of the labor market. However, the term was appropriated by several authors in the educational field and currently has multiple meanings, many of them contradictory. Competency, in the VCPH's educational framework, is understood as comprehensive action that makes it possible to properly and ethically identify, interpret, argue, and solve contextual problems, integrating knowledge of how to be, do, and know (24). In the very concept of competency, the value of experience and activity is relevant insofar as it seeks to integrate knowledge, skills, and attitudes. The value of thinking about educational processes designed to build competencies lies in the possibility of learning and continuing to learn in an ever more complex and globalized world (25).

With the competency-based approach, the aim is to achieve comprehensive action that makes it possible to properly and ethically identify, interpret, argue, and solve contextual problems, integrating knowledge of how to be, do, and know.

It is important to note that the VCPH is developing a renewed educational approach fueled by new inputs to permanent education. It is hoped that when developing new projects, decisionmakers will have sufficient support from the various scientific disciplines considered in this framework.

Furthermore, in the Americas—a region characterized by inequities—the VCPH promotes a social perspective when developing its training initiatives. This means reviewing potential barriers and facilitators to promote access and inclusion of the widest possible diversity of participants, communities, and organizations in the Region.

Conditions that must be met by training initiatives for the Virtual Campus for Public Health

- Grounded in science.
- Inclusive.
- Accessible.

In this regard, the VCPH echoes the need to mainstream the gender perspective in the design, development, and evaluation of its projects and in the creation of its work teams, as indicated in the *Report of the Secretary-General of the United Nations*, document E2019/54 (26).

Finally, it should be noted that the choice of educational model is consistent with the PAHO mission and values, the VCPH governance model, PAHO technical cooperation at the country and regional level, and the understanding of public health and its processes and institutions as a complex system. It also provides a framework for coordination with global initiatives emerging from the WHO Academy (6), emphasizing adaptation to local realities and the creation of teaching teams responsible for their implementation.

VCPH is continuously reflecting on and analyzing its projects' consistency with the values and principles that guide and give meaning to PAHO and its Campus. At the same time, the Campus maintains channels for ongoing exchange with its strategic partners to update its methodologies and activities in each new initiative.

1.5. Virtual education and remote access to education during the COVID-19 pandemic

The COVID-19 pandemic and the need for mandatory social isolation profoundly transformed educational practices at all levels worldwide. Virtual environments came to predominate and were the solution for achieving educational continuity. This posed a challenge for virtual education that led to the search for solutions in record time, accelerated the conversion to virtual environments, and raised the question of how much in-person attendance is essential in education. Nonetheless, remote education in an emergency is not the same thing as virtual learning (27). Emergency remote education is a rush toward a virtual environment to meet a situational need, burdened by inexperience and prejudice about working in this environment. Virtual learning is the result of careful educational design and planning, based on a systematic model (28). This design process is not guaranteed in emergency virtualization; however, the cumulative experience of the VCPH was critical in mitigating and providing solutions to social isolation. Educational initiatives should be designed, adapted, and reoriented through a relevant combination of available teaching methods and technology.

The evaluation of experiences in virtualization during the pandemic will help shed light on best practices and deep-rooted biases about virtual education. This will accelerate educational change, leading to an understanding that virtual education is an equally good alternative to in-person education, or an excellent complement to it. We hope that the prominent place of virtual education during the COVID-19 pandemic puts an end to the perception that it is remedial or second-class education. This modality is no longer the baby brother of in-person education.

The prominent place of virtual education during the COVID-19 pandemic gave standing to this modality, demolishing the prejudice that it is remedial or second-class education. Virtual education is no longer the baby brother of in-person education.

CHAPTER 2. Teaching and learning in virtual environments

2.1. Introduction

Virtual education (VE) requires the use of digital technologies, but it is a different form of education that offers a renewed vision of both traditional distance education and in-person education.

In the VCPH, where lifelong education is considered a right and a process based on encounter, dialogue, and collective construction, VE is more than just a “technological leap.” It implies constant concern about access and potential barriers to educational initiatives, as well as a search for alternative spaces for the construction of knowledge that can be used in both in-person and virtual education (29).

2.2. Virtual training of human resources for health

The VCPH offers an educational space for sharing and collaborative learning in networks consistent with current VE approaches.

Its initiatives are aimed at the development of professional competencies in health through digital encounters between participants and teachers.

This section explores which aspects should be taken into account to develop good quality educational approaches in these environments.

The experience of the past 25 years, combined with the situation during the COVID-19 pandemic, leads to the conclusion that simply using technologies does not represent innovation or guarantee meaningful learning applicable to the transformation of critical processes in health systems.

Technology can help to create appropriate virtual initiatives insofar as it is nurtured, supporting and interacting with pedagogical knowledge, and considering the particular characteristics of the groups targeted by the training activities.

Therefore, the Virtual Campus for Public Health prioritizes the following aspects and attempts to ensure that they are included in its educational initiatives:

- Different formats, languages, and modalities.
- Flexibility in the use of time and space.

- Synchronous and asynchronous spaces for interaction and production.
- Interaction among people from different contexts, places, and educational backgrounds.
- Access to reliable sources of digital information.
- Dialogue-based, multidirectional communication and learning that avoids one-way transmission.
- Learning activities that foster collaboration and cooperation.

In this approach, a virtual campus such as the VCPH should be understood not so much as a compendium of courses but an ecosystem of diverse networked learning initiatives: a meeting place with infinite possibilities for sharing and developing local and regional collaboration and cooperation projects.

Digital learning spaces offer the possibility of choosing when, where, and how to study and participate. Moreover, they increase access to personal, gender, work, and training diversity. In the VCPH, the plan is to introduce alternatives to traditional educational initiatives, as the latter consist primarily of one-way transmission of information, with little or no room for participants to be involved in the critical and collective construction and deconstruction of knowledge and practices.

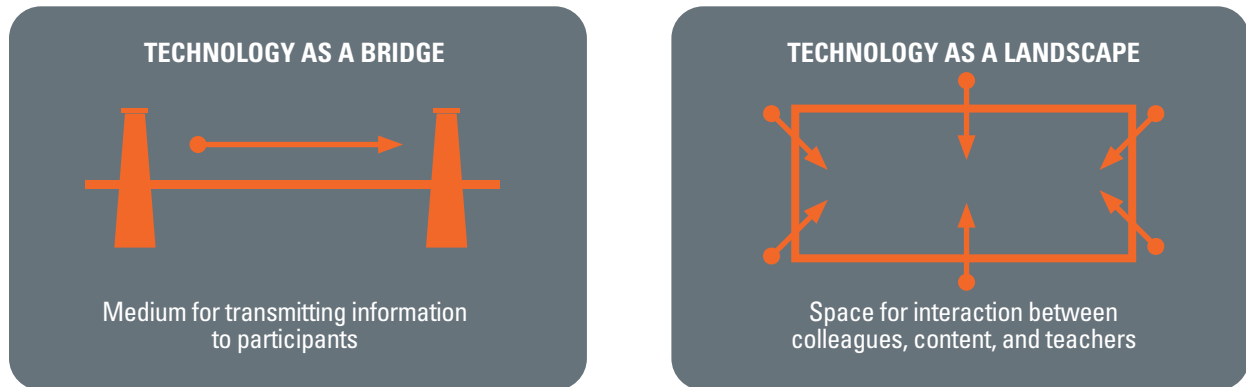
To get beyond transmission-based teaching approaches, we must understand when we “move” to virtual learning that training is not synonymous with opening classrooms based on the reading of written material or on viewing videos in instructor-led classes, but providing a range of options to facilitate access and increase learning.

2.3. The virtual learning environment as a meeting place

Technology has always been present in education, from blackboard and chalk to ICTs, which have played a more or less leading role since the 1950s. Radio, then television, were fundamental to the strategies for democratizing access to knowledge and overcoming the problems of distance and geographic isolation. In the 1990s, massive use of the internet was a milestone for education, as it opened the possibility of interaction and not just one-way transmission. Nonetheless, the transmission model continues to follow the guiding principle of technology as a bridge for conveying information, and virtual education initiatives based mainly on content delivery persist. Several studies in the late 20th century already noted that people’s interaction with technology is what shapes and gives meaning and context to its use (30).

In the early 2000s, the arrival of Web 2.0, with a package of new services and applications such as YouTube and Wikipedia, strengthened the capacity for interaction and collaborative production and introduced a certain horizontality in relations among users (31). This technology makes it possible to offer educational activities involving a more constructivist concept of learning. In the digital space, a variety of approaches can be developed that enable people to actively and deeply engage with their learning and, in turn, experience learning as a collective activity. In this way, educational processes go beyond the delivery of information and become a common landscape in which participants, teachers, and content are the basic triad for the construction of new knowledge.

Figure 2. Technology as a bridge or landscape



In the VCPH, quality virtual educational initiatives are constructed in a digital landscape which, in addition to offering content, creates a meeting space that promotes critical thinking and reflective practices marked by active learning experiences and smooth exchanges between health teams and teaching teams.

Current technology offers a range of tools for developing learning activities in different formats without the need to emulate in-person educational processes. These tools are included in the VCPH's virtual teaching platform (Learning Management System—LMS). Given the multiplicity of available platforms, the VCPH's institutional decision to select the Moodle platform was based on it being an open-source, freely available, and cost-free software package, and on its design as a global community in which thousands of innovators, administrators, teachers, and users work collectively to improve and maintain it. Today, it is the virtual education platform most utilized at the international level.² Moodle provides a single integrated system to create attractive, innovative learning experiences, due to its high potential for synchronous and asynchronous interaction; its monitoring, support, and certification tools for participants; and its ability to generate a wide range of statistical reports for teachers and administrators.

Due to its digital architecture and available resources, the VCPH's digital environment has great potential for implementing innovative, versatile educational initiatives under the proposed educational approach.

2.4. Learning in virtual environments

Health care and health management activities are sources of lifelong learning that require revision, modification, and, periodically, more profound transformation. It is customary to introduce new practices, implement new treatment guidelines, explore new scenarios, change approaches, understand the reemergence of diseases that were once considered eradicated, and accept and treat new diseases, such as the recent experience with the COVID-19 pandemic. In any of these examples, it is worth asking, "What activities are being carried out for learning? How do we change our professional practices?" If we examine the customary activities, we will surely recognize that we do much more than read and automatically reproduce what we have read, because learning involves executing a variety of activities, such as investigating, reflecting, dialoguing, sharing perspectives, evaluating alternatives, and exploring new practices, knowledge, and landscapes.

² For more information about this platform, visit: <https://moodle.org/>.

Figure 3. Activities that promote learning



As already mentioned, learning is the product of an active process of construction by individuals. Although many tasks can be done in isolation, much of the learning in personal and work life essentially involves actions in relation to others: questioning, discussing, sharing, and validating.

Therefore, these same types of activities that we learn from in real work scenarios are those that should be replicated in learning activities, whether in-person, virtual, or hybrid.

The VCPH's permanent education initiatives focus on learning activities, teaching support, and interaction among group participants.

In the VCPH's educational approach, learning is linked to personal and environmental transformation. Thus, it is necessary to prioritize meaningful critical learning experiences, which Marco Antonio Moreira understands as learning that allows learners to develop crosscutting competencies to reflect on their practice and their environment. Quoting Neil Postman, Moreira (32) notes, "Once you have learned to ask questions—relevant and appropriate and substantial questions—you have learned how to learn..." This involves learning to reject fixed truths, certainties, and absolute definitions, and how to work in complex contexts: understanding how to manage information critically without feeling powerless, how to use technology without idolizing it, how to live with uncertainty, relativity, multiple causality, etc.

It is important to note that students' necessary activism in their learning process does not mean denying the validity of teachers' explanations. As Paulo Freire (33) points out: "Teaching is not transferring knowledge, but creating the opportunities for its own production or construction." What is fundamental is that teachers and students adopt an open, inquisitive, inquiring, and non-passive dialogical stance.

Within the framework of PEH, achieving critical, meaningful learning requires an active process that includes reflecting, interacting, and producing with others. Therefore, the VCPH's virtual educational initiatives focus on learning activities that replicate situations from work scenarios and promote interaction in all training entities.

Learning is a defined social phenomenon. The VCPH fosters the creation of learning networks among actors who share health practices in the diverse regional context.

2.5. Teaching in virtual environments

Teaching is a task whose main objective is for participants in an educational activity to learn. This involves creating the conditions and opportunities for this to happen. Making information available is not enough to constitute teaching. Planning and support are essential teaching tools for critical reflective learning. Teaching requires these actions both in person and in virtual environments. What changes in virtual environments are the conditions under which this is possible—i.e., the times, spaces, resources, and modes of interaction are different.

Teaching involves creating the conditions and opportunities for meaningful learning to take place both in person and in virtual environments. What changes in virtual environments are the conditions under which this is possible—i.e., the times, spaces, resources, and modes of interaction are different.

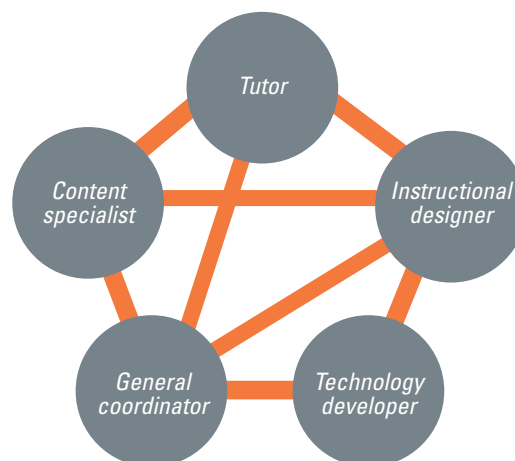
2.5.1. Virtual teaching as a collective effort

The distinguishing feature of virtual teaching is that it is provided by a group of people with different functions, and interdependent tasks are distributed in a team effort that includes:

- Deciding what content to include and how to make it accessible to participants.
- Designing specific learning activities and instructional materials.
- Building a digital space to implement the designed educational process.
- Supporting and guiding the learning process of the group and each participant.
- Evaluating what the group and each participant has learned.
- Evaluating implementation of the educational activity.

In virtual environments, teaching is always an interdisciplinary effort in which it is advisable to have content specialists, tutors, teachers with experience in virtual instructional design, people who create multimedia technologies, and others. In this team, joint decisions are made on technological, pedagogical, and content choices that have an impact on the construction of a quality educational initiative.

Figure 4. Main functions of a virtual teaching team



In virtual environments, teaching is an interdisciplinary effort by content specialists, teacher-tutors, educational staff specializing in virtual instructional design, and experts in innovative multimedia technology.

2.6. Educational formats of the Virtual Campus for Public Health

One of the VCPH's main goals is to improve the access and inclusion of the Region's health teams in the permanent education experiences it offers, in order to break down as many sociocultural, gender, linguistic, technological, and geographical barriers as possible. Thus, it is constantly exploring new and diverse formats.

As a resource ecosystem, the VCPH coordinates and integrates these diverse activities to form local and regional learning networks that will enrich the educational trajectories of the Region's health teams.

The formats that are fully operational and those that are in an exploratory phase are presented below.

2.6.1. Courses

These are formal, systematic educational activities conducted in the virtual environment of the VCPH. The learning achievements sought are well-defined and can be put into practice several times, either simultaneously or sequentially.

They can be divided into two major groups of activities that differ mainly in terms of their teaching function. They are described below.

2.6.1.1. Courses moderated by teacher-tutors

In these courses, the teacher-tutor is key. Teaching is focused on supporting the learning process of closed groups of participants, and courses usually have a specific start and end date.

In the different activities, variations in the teacher's presence and participation can be found on a continuum ranging from courses where it is substantial, to others where the teacher simply addresses participants' concerns and questions, serving as an "educational gatekeeper."

The reasons for adopting more active or less active teaching models may be related to budgetary issues, as well as the lack of professionalization of teaching functions for virtual environments.

2.6.1.2. Self-learning courses

This type of course does not involve teacher-tutors. In its best-known format, it is based on an approach in which participants learn on their own at their own pace without the support of a teacher. These courses are designed for independent learning. Depending on the objectives and audience of each course, there may or may not be admission requirements, specific start and end dates, or learning activities (usually based on automated responses) to assess and accredit the learning that takes place.

It should be noted that these activities are useful when a large number of participants must be reached and when budgetary resources are scarce. They are also appropriate when health workers need rapid, mass access to new information or procedures.

Experience with these types of courses has shown lower completion rates than courses with a teacher-tutor, since continuity is more difficult to sustain without the support of a study group and teacher. Despite the difficulties inherent to this modality, the VCPH has designed self-study courses with low dropout rates. The following are some of the keys to this achievement:

- Activities to interrupt the participants' isolation were developed, among them: peer or group evaluations with exchange of comments or voluntary input from other participants.
- Evaluations were conducted that went beyond the verification of retained information; they included simulation-based or problem-based evaluations that could be translated into practice.

In this way, self-learning courses cease to be a repository of organized information and become spaces where a small learning community can be created that participants consult not only for information but to share and dialogue with their peers.

2.6.2. Open educational resources

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), an open educational resource (OER) is any resource designed for teaching and learning that is fully available for use without having to pay royalties or licensing fees.

OERs can be designed from the outset as independent components that communicate educational content, or they can be part of a training activity that, once implemented, opens all or part of its educational resources and turns them into OERs.

Their main feature is that they are freely accessible, and unrestricted circulation is guaranteed by the use of Creative Commons (CC) licenses.³ There are different types of these licenses, which not only protect authorship of the resource but prevent its commercialization and allow its free use, circulation, distribution, and in some cases, modification.

PAHO's OER policy is explained in the document *General Policy on the Open Educational Resources Network, Virtual Campus for Public Health (VCPH) and Virtual Health Library (VHL)* (34). It should be noted that—consistent with the network policy and the promotion of coordination and cooperation among the regional, subregional, and country nodes—any course designed in the VCPH, once completed, becomes an OER that can be reused as designed, or adapted and modified.

Some teachers and investigators publish their documents or research papers under CC licenses to promote their free circulation at no charge in support of the concept of free culture created by Lawrence Lessig (35), who advocates that culture and knowledge should be within the reach of all of society without limitations, so that all people can benefit from them and enjoy them with the fewest possible barriers.

³ For more information, visit the Creative Commons website: <https://creativecommons.org/>.

To boost the educational potential of OERs, two options are proposed:

- Guided learning tours, also called playlists. These resources are developed, selected, sequenced, and presented by experts to explain the meaning and direction of the proposed learning path. Their formats may differ, may present more than one path, and may or may not contain space for comments. They are a free and unscheduled activity that people can access and use as needed. This format is useful, for example, for introducing health teams to the problems involved in a topic.
- OERs include the possibility of commenting on their contents—for example, input and comments about a resource can provide new information, update contents, or offer new perspectives on the subject.

2.6.3. Virtual communities of practice: management, learning, teaching, and research

The term “communities of practice” was coined relatively recently by Étienne Wenger (36) in 1991 and refers to a phenomenon explored in this publication: learning as a social phenomenon that occurs in different contexts. This means that, faced with a specific practice issue in an organization, a single individual is not tasked with coming up with a solution, designing a plan, and then executing it. Practical problems are resolved collectively through joint participation in the practice with the actors involved, and in the context in which they occur.

Based on this concept, the VCPH promotes the organization of communities of practice, understood as a group of people linked by a common, recurrent, and stable issue over time, in which they learn about a given practice. A key aspect of these communities is self-management, since they depend on group consensus about the objectives and issues to be addressed, thus defining what is important. Broadly speaking, the issues addressed may involve management, learning, teaching, or research activities.

While many communities of practice form spontaneously without institutional mediation, a growing number of organizations focus their efforts on promoting them as a key element for improving their performance. For the VCPH, facilitating and encouraging virtual communities of practice is another strategy for building knowledge networks in the diverse regional context.

In the VCPH, management spaces function the same way as virtual communities of practice. They are spaces for collaborative work, discussion, and analysis, where a group of people discuss a topic without receiving a certificate or diploma at the end. In these spaces, relevant resources are exchanged; there are forums for sharing to review and discuss the resources, arrive at a consensus, and reach conclusions and decisions on common actions.

Learning is a social phenomenon that occurs in different contexts. The VCPH encourages the creation of virtual communities of practice and strategies for building networks with common health practices in the diverse regional context.

2.7. Innovation in the Virtual Campus for Public Health: new trends in virtual education

2.7.1. Introduction

Last, we will provide a brief presentation on some new and emerging technology trends in education that may be useful for including innovation in VCPH initiatives.

As we have already mentioned, educational technologies are not good or bad in themselves; rather, their inclusion must be critically studied to determine their relevance and benefit to a particular context and purpose. Those of us responsible for educational decision-making on the use of technology must be able to analyze the potential benefits, advantages, and risks of the investments we make in an aggressive market with a continuous supply of “magic” solutions to education’s perennial problems, and be able to distinguish between a real educational innovation and technology that is being used cosmetically to create a veneer of modernity for traditional educational practices.

When exploring the introduction of new technologies, consideration must be given to whether they contribute to putting the educational ideas of the VCPH into practice or merely replicate educational models grounded primarily in the transmission of information.

The following are the main technology trends and advances applied to education that the VCPH is including, or considering including, in its virtual activities.

2.7.2. Artificial intelligence, big data, data extraction, and learning analytics

The terms *big data*, *data mining*, and *learning analytics* refer to a variety of innovations whose common purpose is to extract the maximum value from the wealth of data generated today in the digital world.

Big data refers to the storage of large amounts of data and the procedures used to find repetitive patterns within it. It is technology capable of quickly and efficiently capturing, managing, and processing those data.

Data mining is the process of identifying all the relevant information extracted from large amounts of data. Its purpose is to discover patterns and trends, and organize the information obtained in an understandable way in order to make it usable. It is important to point out that this data selection and extraction process involves subjective decisions. A data point is not an indisputable object, since the decision about which data are relevant and how they are interpreted depends on different theoretical frameworks where subjectivity and ideological positions come into play.

2.7.2.1. Learning analytics

When big data are applied in digital educational environments, we are talking about *learning analytics*. Learning analytics consist of measuring, collecting, analyzing, and preparing reports from data on people who use the VCPH, and their contexts, in order to understand and optimize learning and the digital environment in which it occurs.

In the VCPH, this line of work is considered a priority in order to make regional and country decisions that increase the use of the platform and take advantage of user experiences by eliminating potential access barriers.

With learning analytics, large amounts of data can be collected from the interactions of participants, for example, and automated reports on participant performance and the quality of the courses can be generated.

It should be noted that learning analytics is not only used in the final data collection process but provides relevant information at all points in the educational process.

In addition, it is easy to collect data on how many students answered a question well or which question more students got wrong. The difficulty of mass data collection lies in how they are collected and in determining which data are relevant and important in learning processes that are focused on the development of complex practices rather than on the retention of information.

2.7.3. Gamification in learning and game-based learning

Gamification is the inclusion of certain characteristics of games in an educational process. Earning points, rewards, and incentives for participation, for example, are often considered a way to motivate students and connect them with the emotions that play generates.

Gamification is a widespread strategy in new educational technology products and is offered as a way to improve educational outcomes by making learning processes more fun. The idea of rewarding positive behavior and engaging participants in group competitions is a longstanding tradition in education that is intensified by technology. The reinforcement of successful positive behaviors through rewards is one of the pillars of learning, a contribution of behaviorist educational currents (37).

The dynamics of gamification have proven effective in short sequences, particularly if complemented with other dynamics to maintain student interest and the motivation to learn over the medium term.

It is important to note that gamification should not be confused with play-based learning. The former ensures a comprehensive and complex experience that offers the possibility of actively participating and meaningfully interacting with the other participants to seek creative solutions to the problems posed by the game. While participating in the game, the brain's reward circuits are activated and the participant is focused on the game and its dynamics; thus, the transfer of learning to contexts other than the game is not automatic. If participants are to make a valuable transfer from the game, supplementary activities need to be organized, such as spaces for reflection and metacognition on what happened during the game.

2.7.4. Simulation in training the health team

Health teams practice in increasingly complex circumstances that make new teaching strategies necessary to develop the required competencies. Simulation is a valuable tool for improving training conditions for health workers, as it offers "safe" opportunities for training and updating.

It is also a strategy for improving the quality of care in health systems and patient safety, since it allows health workers to make mistakes without harming people who use the services, in addition to reducing patient discomfort and the risks that may arise during the acquisition of new skills. The rise in medical errors in health care has become a growing concern internationally, and one of the causes identified is inadequate or insufficient staff training. This is detailed in the WHO report *Global Action on Patient Safety* (38), approved at the 72nd World Health Assembly.

Simulation stresses learning through the creation of scenarios that bear great resemblance to reality, while teaching strategies may be based on different resources, such as dummies that look human (interactive and non-interactive); artificial anatomical models, living models, or cadavers; actors that simulate real patients; and, finally, the development of different types of virtual patient and decision-making software, as well as the use of virtual reality.

Special mention will be made of the last point here, as it is especially relevant for the VCPH.

Virtual patient applications have been extensively employed in the health sciences, and their use includes a wide variety of technology tools, from robotic simulators to virtual reality and smart systems (39).

Also promising are experiences in virtual reality, understood as a sensory immersion experience that creates the perception of presence through complex technology: a helmet, sensors, gloves, 360-degree videos, image processing. The complexity and cost of this equipment put virtual reality on the VCPH's medium-term horizon.

The COVID-19 pandemic imposed serious constraints on in-person practices and accelerated the analytical processes of institutions that develop strategies to bring simulated processes to the virtual environment. Evaluating these experiences will undoubtedly help to determine their scope, risks, and potential.

In short, many innovations appear to be trends in educational technology, but they are fleeting and require significant investments of resources of every kind. Emerging trends must, therefore, be studied using multivariate analysis, and the pedagogical substratum of these innovations must be examined.

In many cases it is possible to adopt certain technological advances and discover other ways to apply them in education, thus creating collaborative and networked learning initiatives aligned with the VCPH's educational approach.

The acceleration and diversification of technology require an inquisitive, complex, and critical look at emerging educational innovation initiatives in order to analyze them and put them at the service of the VCPH's objectives—not the other way around.

FINAL CONSIDERATIONS

It is hoped that this publication will serve as a frame of reference for PAHO stakeholders with project management responsibilities in the VCPH and for the governments, ministries, institutions, and organizations that are part of the country nodes.

It reviews the background and main characteristics that distinguish the VCPH's educational approach, which is aligned with the mission, vision, and principles of PAHO.

It presents the way in which the VCPH conceives teaching and learning in virtual environments and, finally, describes the lines of educational innovation that the VCPH is currently reviewing.

The intention here is not to engage in conceptual debate surrounding virtual education or the use of technology in education but to create the guiding framework for PAHO's VCPH in terms of educational advances. As already mentioned, educational approaches are dynamic and require periodic review.

The intention in the VCPH has been, and continues to be, to promote and facilitate use of this educational ecosystem by the people in charge of technical cooperation in the different areas of the Organization. A rapid, streamlined transfer of different forms of virtual education for the design of courses and other VCPH initiatives will only be achieved through deep reflection and continuous review of activities. This emanates from institutional mandates, integrates different conceptual frameworks, and incorporates the fundamentals of science and the work experience amassed since its creation.

Knowing and disseminating the VCPH's educational approach is one more way to leverage the power of training to meet public health objectives.

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The Virtual Campus for Public Health (VCPH) is a strategic tool of the Pan American Health Organization (PAHO) for technical cooperation. As such, it is a space for distributing, managing, and updating knowledge in public health and for strengthening the capacities and competencies of the Region's health teams.

This publication offers guidance on the educational approach of the PAHO VCPH. It is directed at PAHO staff responsible for project management in the VCPH, as well as the governments, ministries, institutions, and organizations that are part of the country nodes.

An educational approach is a conceptual and methodological framework that explains, guides, and specifies educational processes and outcomes. In this case, the general framework supports training interventions in the field of public health.

This report presents the vision, mission, and principles on which the VCPH is structured, the concept of permanent education in health, the principles of competency-based education, the difficulties involved in training health teams in the information society, new contributions to the VCPH's educational approach, and features of its initiatives in the framework of technical cooperation.