

Distance learning in times of Covid-19: importance, strengths and limitations - Case of the Regional School of Public Health of the Catholic University of Bukavu in Democratic Republic of Congo

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Abstract

The outbreak of Covid-19 has limited travel around the world, even for visiting teachers, including those from the Catholic University of Bukavu in the Democratic Republic of Congo. Faced with the digital divide in this country, a distance learning model was designed and tested between May and July 2020 to allow access to two courses (Policy, organization, structures and regulation of health systems as well as Planning, implementation, monitoring and health evaluation) to 38 students enrolled in a master's degree in public health at the regional school of public health in Bukavu. The implementation of this model was documented, and a survey was conducted among the 38 students who participated in both courses to evaluate this distance learning model. The results of this study present the model using mainly email and the WhatsApp network, describe the complete course flow, the challenges encountered, the adaptations introduced to the distance learning model of these two courses. Remotely, courses in the form of a PowerPoint with narration were transmitted gradually to the students in a WhatsApp group and by email; discussions in the group were organized under the moderation of the teacher; the students' questions were centralized by the assistant and answers were formulated by the teacher either through voice messages on WhatsApp or using an illustrative PowerPoint with narration; daily assignments were systematically given to students for pedagogical support of their application and to attest to their effective participation in the courses. The study shows that in a situation of digital divide and confinement, it is possible to adapt distance learning models to ensure knowledge transfer.

Keywords: Covid-19; Distance Learning; Public Health School; DR Congo

Introduction

In early December 2019 a cluster of cases of pneumonia of unknown cause was identified in Wuhan, a city of 11 million persons in the People's Republic of China. Further investigation revealed these cases to result from infection with a newly identified coronavirus, initially termed 2019-nCoV and subsequently SARS-CoV-2. The infection moved rapidly through China, spread to Thailand and Japan, extended into adjacent countries through infected persons travelling by air, eventually reaching multiple countries and continents [1,2]. This infection will be declared by the World

Health Organization (WHO) as a public health emergency of international concern on 30 January 2020 [3] and then a pandemic on 11 March 2020 [4].

In the Democratic Republic of the Congo, the first case was reported on 10 March 2020 [5] and very quickly, the number of new cases rose to 98 with 8 deaths on 30 March, 7122 with 175 deaths on 30 June, 10685 with 272 deaths on 30 September and 17657 with 591 deaths on 30 December 2020 [6]. This situation has imposed a series of measures including confinement, social distancing or limiting travel around the world with challenges of organi-

zing distance learning [7,8] using new information technologies for further training in schools and universities.

These measures have been applied with the same rigor in the Democratic Republic of Congo [9] despite the digital divide that the country is going through [10]. The experience of distance learning courses was not very developed in the DRC [11] before the Covid-19 pandemic. Some experiences of distance learning using digital tools, including access to the course on websites, are reported [11,12], some of which have actually improved the skills of the people trained [13]. Distance learning is therefore a little-used practice whose update has been necessary with the occurrence of Covid-19 taking into account the tools accessible and offered by current technology.

Teaching at the Regional School of Public Health of the Catholic University of Bukavu is mainly done face-to-face for both local teachers and visitors. Although accepted by the University, prior to

the Covid-19 experience, no courses have been given online in the last five years.

Distance learning model set up for two courses at the Catholic University of Bukavu

Faced with the occurrence of the Covid-19 pandemic with a first confinement in a context of a digital divide in DR Congo [10], a distance learning model was designed and tested between May and July 2020 at the Regional School of Public Health (ERSP) of the Catholic University of Bukavu (UCB). This model was applied in order to allow access to two courses; a first course on «Policy, organization, structures and regulation of health systems» and a second on «Planning, implementation, monitoring and health evaluation» for 38 students enrolled in the Master's degree in public health at the Bukavu ERSP.

The model, shown in figure 1, used primarily email and the WhatsApp network.

Figure 1: Remote Learning Model Task Descriptions and Tools.

The design of the teaching model began with the appointment of an assistant based in the university town of Bukavu and to work closely with the teacher confined to Mauritius. The assistant who is a doctor with a master's degree in community health, PhD student in public health and researcher at the ERSP, had the mission to

contact students and university authorities in case of severe failure of the Internet, to obtain the list of students, their profile, and interests, to open a WhatsApp group for classes by sharing at the same time the telephone coordinates, of the teacher's email, Skype and WhatsApp. Once the WhatsApp group was opened and the email

addresses were shared, the teacher sent the pedagogical sheet with course content, teaching and evaluation method and bibliographic references. He then taught remotely through courses in the form of PowerPoint with audible narration transmitted by email and WhatsApp; answering at the same time the batches of learners' questions, centralized by the assistant, and sent by email. A daily assignment was given and carried out on the same day by each learner, a method chosen to attest to the effective participation in the course. WhatsApp sub-groups have been set up, allowing to exchange and finalize the work in groups. To reach the professor, some students sometimes resorted to Skype, in addition to WhatsApp or email. WhatsApp offered the possibility to export the different messages to the email or to a Word file, then analyze these messages and react to them retrospectively. The originality of this method is the introduction of discussion groups by WhatsApp under the moderation of the teacher.

Objective of the study

The present study aims to evaluate this model of distance learning applied to the Regional School of Public Health of the Catholic University of Bukavu during the first year of the Covid-19 pandemic.

Methodology

The study is quasi-experimental using the survey of the 38 students who participated in the two courses offered during the period from May to July 2020, including 12 women and 26 men. The study took place in August 2020. A pre-established questionnaire was administered to the learners. The questionnaire focused on the learner's place of residence, age, gender, occupation, seniority in his or her profession, interest in taking the master's degree in public health, previous experience of distance learning, degree of appreciation of the courses and proposals for improvement of future distance learning courses.

All students were invited to participate freely in the study. The questionnaire was administered online, using Survey Monkey. The response rate was 97.7% (n = 38). The information collected was analyzed by theme through a thematic framework focusing on two main questions: (1) appreciation of the distance course model and (2) proposed improvements to improve the model.

Results

Characteristics of Students Master's year 2019-2020 at ERSP UCB

As illustrated in table 1; 78% of learners resided in Bukavu, 70% were doctors, 71% had more than 5 years of professional experience and only 14% had previous experience of participating in distance learning.

Residence (n = 37)	n = 37	(%)
Bukavu	29	78.4%
Uvira	3	8.1%
Goma	3	8.1%
Kamanyola	2	5.4%
Profession (n = 37)	n = 37	(%)
Development Agent	2	5.4%
Doctor	26	70.3%
Pharmacist	1	2.7%
Health Officer	1	2.7%
Agent de SP	1	2.7%
PS Humanitarian	6	16.2%
Professional seniority	n = 35	(%)
0 to 1 year	5	14.3%
2 to 4 years	5	14.3%
5 to 9 years	10	28.6%
10 years and older	15	42.9%
Previous experience following a distance course	n = 37	(%)
Yes	5	13.5%
Not	32	86.5%

Table 1: Student characteristics.

Assessment of the distance learning model

In the distance learning model, in addition to the creation of a WhatsApp group and the prior sending of course notes by email that are well appreciated by 100% of participants, the adaptation initiatives most appreciated positively in order of importance are the presence of an assistant for the course (46.0%), the completion of a daily assignment (41.5%) and the organization of instant chats on WhatsApp and then on Zoom (13.5%). The least appreciated elements are presented in table 2.

N°	Adverse aspects	Citation frequency (n = 37)	Description
1	Faulty or expensive connection to the Internet	13	Financial barrier (high costs) and technical barrier (poor internet connection to Bukavu). Technical difficulties due to poor internet connection in Bukavu (local). Internet access is not paid for by the University.
2	Poor quality of zoom conference	7	Low mastery of ZOOM technology, without prior training of students.
3	Lack of contact with the teacher	8	The lack of direct interaction with the professor limits discussions and students' ability to ask clarifying questions.
4	Short deadlines for exchanges with the teacher and the submission of homework	4	The time was limited for exchanges with the teacher on the one hand and the very short deadline for submitting daily homework did not allow the students to take ownership of the course.
5	Non-compliance with instructions by some students	9	The participation of some was made for the formality of confirming their attendance at the courses, Some students were not punctual, It was difficult to get everyone actively participating on WhatsApp, The flow of discussions has sometimes been intense without being able to undergo appropriate regulation.

Table 2: Less appreciated elements of the distance learning model.

Propositions to improve the model

To improve the distance learning framework, improvements are proposed in table 3 and mainly concern the organization of teaching and the evaluation of courses (8 citations), the respect

of instructions by learners (5 citations), the improvement of the connection tool (15 citations) and the adaptation of distance learning methods within the University (2 citations).

N°	Areas for improvement	Citation frequency (n = 37)	Description
1	Improve the organization of teaching and course evaluation	8	Plan the Powerpoint projections of the course, Switch to methods with the possibility of video-conferencing, Rigorously manage the speaking time granted to participants, Give more reading time to learners for a good assimilation of the subject, Submit summary explanatory videos at the end of each course session. Ensure that learners prepare the course sessions in advance, especially since course notes are available in advance.
2	Follow the instructions by the Students	5	Respect groups of people designated to answer questions before comments from other learners, Ensure that learners prepare the course sessions in advance, especially since course notes are available in advance.

3	Improve the connection tool to improve teacher learning and visibility	15	Use the zoom application or any other to see the teacher at the same time because the messages sent by WhatsApp take time, Ensure a better connection to the Internet (stable and accessible)
4	Develop methods adapted to the context within the University	2	The involvement of the university to set up digital tools facilitating a remote teacher from distant visiting teachers who cannot travel to Bukavu.
5	Other recommendations	2	Offer more time to students for the synthesis of course chapters, Democratically re-establish working groups to facilitate their affinities, Take the exam no later than two weeks after the end of the course.

Table 3: Improvement of the distance learning framework.

Discussion

The objective of the study was to evaluate a distance learning model applied to the Regional School of Public Health of the Catholic University of Bukavu during the first year of the Covid-19 pandemic. This model concerned two courses (Health Systems Policy, Organization, Structures and Regulation and Health Planning, Implementation, Monitoring and Evaluation). The observed results discussed in the following paragraphs concern the previous experience of learners with distance learning, the success factors of the applied model, the negative aspects identified and the improvements proposed to improve the distance learning framework.

Previous experience of learners participating in distance learning

Despite their basic occupation (70% of learners are doctors and 16% of managers working for international humanitarian organizations), the vast majority of learners (87%) had no previous experience of participating in distance learning. This training model, imposed by Covid-19 and based on on-board technology at the time of the pandemic outbreak, namely WhatsApp and email, was applied without prior initiation or preparation. The lack of previous learner experience has therefore not been an obstacle to distance learning. Students were unanimously satisfied to participate in the distance learning course, a result that corroborates that of other studies on distance learning in times of Covid-19 [7,8,14,15].

Success factors of the applied model

The presence of an assistant based in the same city as the learners was a considerable success factor, relaying the digital divide

through local phone calls at an affordable cost than those in international or through face-to-face meetings with distancing measures to adequately respond to the requests and questions of the learners. The second success factor of performing a daily assignment was a real pedagogical support to the learners, allowing them to maintain the level of concentration and application, but also to formulate daily detailed questions of clarification for the attention of the teacher. Finally, discussions on the WhatsApp group and subsequently on Zoom were mentioned as a factor in the success of learning, despite the unpreparedness of students for this distance learning framework that has adapted during the training. Focus groups facilitate interaction between learners and promote learning [16]. In addition to the preparation of students, factors recognized as favorable to distance learning are usually the support of the institution, the definition of clear learning objectives, the mastery of the technological resources available or the stages of course development [17].

Negative aspects identified

The negative factors most cited by learners were insufficient Internet connection as a result of technological difficulties or the exorbitant cost of Internet access for some learners (13 citations), poor quality of Zoom lectures (7 quotes), lack of eye contact with the teacher (8 quotes), short deadlines for exchanges with the teacher and submission of assignments (4 citations) as well as non-compliance with instructions related to use communication technologies and distance learning by learners following their unpreparedness (9 citations). These factors largely corroborate some of those identified by Granjon [14]. The latter also evokes

other negative aspects of distance learning including the loss of motivation, the difficulty of concentration, degraded pedagogical interactions, a feeling of isolation, the decrease in the chances of success, the loss of social ties, the feeling of studying fewer things, a dehumanized teaching, the difficulty of organizing, the difficulty of being autonomous, the use of multiple platforms, not having a personal computer [14].

Proposed enhancements to enhance the distance learning framework.

Significant improvement proposals target the organization of teaching and course evaluation (8 citations), compliance with instructions by learners (5 citations), improvement of the communication tool during distance learning (15 citations) and adaptation of distance learning methods within the University (2 citations).

The organization of distance learning requires support for learners using specific tools [18,19] and actors playing a pedagogical support role, including that of distance tutor, administrator and manager of distance learning platforms [20]. In the present study, the support was compensated by the presence of an assistant, unfortunately without the possibility of archiving the exchanges and evaluating the quality of the support for lack of appropriate technological tool. The adoption of information and communication technology (ICT) for training cannot be achieved without change in the organization. These changes affect trainers, who have a professional history, a mentality, practices that have been built over the years and in a specific context of work. However, technological changes can destabilize the professional lives of trainers. It is therefore essential to manage this change, because the success of projects to introduce ICT into training is no longer a function of the power of technologies, but rather of the ability of trainers to exploit their potential in order to change and improve the efficiency of the learning process [21].

In Dalsgaard's model [22], communication tools during online training are organized into three levels. A first level of the platform that concerns the system and all the management tools (the class list, lesson plans, learning objects, assessment tools, etc.). A second level of personal tools that distinguishes between interindividual tools, used by the learner for his learning process (e.g. instant messaging) and collaborative tools, used by learners working in groups to support remote relationships (e.g. a videoconferencing room).

The last level is that of social networks, which is composed of tools for collaboration, sharing contexts and sharing fields of interest (e.g. Facebook, Academia, Ning, etc.). The use of these three levels of tools makes it possible to focus training activities on learners [22].

The role of the teacher in our model was to ensure the training of the different students by interacting with them and ensuring compliance with the guidelines initially set for the smooth running of distance learning. To this end, the project specified the learning objectives and methodology to be followed throughout the training. He also specified a range of resources that could help learners in their work. On WhatsApp, it proved difficult to organize synchronous exchanges, to regulate exchanges between members of the group, to enforce the instructions and deadlines for taking talk. However, the professor facilitated the structuring of the individual work of each student, completing the assistant who at the same time facilitated the collaborative work of the groups formed. Distance learning methods as well as instructions given to learners may not be appropriate and ultimately not respected if they are not adapted to the context. Failure to comply with the instructions can jeopardize the quality of the training [23]. In addition to the confinement linked to the Covid-19 pandemic, distance learning can be useful in a context of scarcity of faculty resources but could hardly be justified in cases of large cohorts [24] of students requiring personalized support.

Conclusion

For the vast majority of learners, distance learning implemented since the first period of confinement by simply transposing traditional education remains a degraded form of pedagogical interaction.

It must be recognized that distance learning, while it ensures a certain pedagogical continuity in the face of a crisis for which no one was prepared (because that was the challenge), cannot be a sustainable and generalized form of teaching. Direct face-to-face pedagogical interaction as well as social interactions that students benefit from in situ are part of their training. We can only study sustainably, effectively, serenely and dare we say, democratically, at the university, face-to-face or from resources specifically designed to be used in distance learning. This Study shows the difficulty of setting up interaction during distance learning

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