

INFORMATION AND COMMUNICATION TECHNOLOGIES IN POSTGRADUATE NURSING EDUCATION DURING THE COVID-19 PANDEMIC

TECNOLOGIAS DA INFORMAÇÃO E COMUNICAÇÃO NO ENSINO DE PÓS-GRADUAÇÃO EM ENFERMAGEM NA PANDEMIA DE COVID-19

TECNOLOGÍAS DE LA INFORMACIÓN Y LA COMUNICACIÓN EN EL POSGRADO DE ENFERMERÍA EN LA PANDEMIA COVID-19

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Authors' Contributions:

Conceptualization: Mônica M. J. Silva, Marislei S. Panobianco, Maria J. Clapis; **Data Collection:** Mônica M. J. Silva, Marislei S. Panobianco, Maria J. Clapis; **Methodology:** Mônica M. J. Silva, Marislei S. Panobianco, Maria J. Clapis; **Writing – Original Draft Preparation:** Mônica M. J. Silva, Marislei S. Panobianco, Maria J. Clapis; **Writing – Review and Edition:** Mônica M. J. Silva, Marislei S. Panobianco, Maria J. Clapis.

Funding: No funding.

Submitted on: 2020/12/03

Approved on: 2021/03/05

Responsible Editors:

 Mariana Santos Felisbino-Mendes
 Tânia Couto Machado Chianca

ABSTRACT

Objective: to report the experience of the use of information and communication technologies in the emergency remote teaching of postgraduate Nursing courses during the COVID-19 pandemic. **Method:** report of experience in postgraduate teaching in a subject of a Nursing Program at a public university in the interior of São Paulo. Secondary data from the subject's evaluation process were used, discussed according to the referential on teaching mediated by information and communication technologies. **Results:** the experience in the emergency remote teaching modality involved the development of the virtual learning environment and the selection of teaching strategies, planning, operation, and evaluation of the subject. The Moodle® and Hangouts Meet® platforms and the Google Forms® application were used. **Final considerations:** the use of non-face-to-face teaching strategies mediated by information and communication technologies, with the use of online tools and platforms, proved to be a challenging and quite satisfactory experience in the emergency remote teaching of postgraduate Nursing.

Keywords: Education, Nursing, Graduate; Education, Distance; Information Technology; Pandemics; Coronavirus Infections.

RESUMO

Objetivo: relatar a experiência do uso das tecnologias da informação e comunicação no ensino remoto emergencial de pós-graduação em Enfermagem durante a pandemia de COVID-19. **Método:** relato de experiência no ensino de pós-graduação stricto sensu em disciplina de um Programa de Enfermagem de uma universidade pública do interior de São Paulo. Foram utilizados dados secundários do processo de avaliação da disciplina, discutidos conforme referencial sobre o ensino mediado pelas tecnologias da informação e comunicação. **Resultados:** a experiência na modalidade de ensino remoto emergencial envolveu o desenvolvimento do ambiente virtual de aprendizagem e seleção das estratégias de ensino, planejamento, operacionalização e avaliação da disciplina. Foram utilizadas as plataformas Moodle® e Hangouts Meet® e o aplicativo Google Forms®. **Considerações finais:** o uso de estratégias de ensino não presenciais mediadas pelas tecnologias da informação e comunicação, com a utilização de plataformas e ferramentas online, demonstrou ser uma experiência desafiadora e bastante satisfatória no ensino remoto emergencial de pós-graduação de Enfermagem.

Palavras-chave: Educação de Pós-Graduação em Enfermagem; Educação a Distância; Tecnologia da Informação; Pandemias; Infecções por Coronavírus.

RESUMEN

Objetivo: reportar la experiencia del uso de las tecnologías de la información y la comunicación en la educación remota de emergencia de los cursos de posgrado en enfermería durante la pandemia de COVID-19. **Método:** relato de experiencia en la docencia de posgrado stricto sensu en la disciplina de un Programa de Enfermería en una universidad pública del interior de São Paulo. Se utilizaron datos secundarios del proceso de evaluación de la disciplina, discutidos según el referencial sobre la enseñanza mediada por las tecnologías de la información y la comunicación. **Resultados:** la experiencia en la modalidad de enseñanza remota de emergencia implicó el desarrollo del entorno virtual de aprendizaje y la selección de estrategias de enseñanza, planificación, operacionalización y evaluación de la disciplina. Se utilizaron las plataformas Moodle® y Hangouts Meet® y la aplicación Google Forms®. **Consideraciones finales:** el uso de estrategias de enseñanza no presencial mediadas por tecnologías de la información y la comunicación, con el uso de herramientas y plataformas en línea, resultó ser una experiencia desafiante y bastante satisfactoria en la enseñanza remota de emergencia del posgrado de enfermería.

Palabras clave: Educación de Postgrado en Enfermería; Educación a Distancia; Tecnología de la Información; Pandemias; Infecciones por Coronavírus.

How to cite this article:

Silva MMJ, Panobianco MS, Clapis MJ. Information and communication technologies in postgraduate Nursing education during the COVID-19 pandemic. REME - Rev Min Enferm. 2021[cited _____];25:e-1368. Available from: _____ DOI: 10.5935/1415.2762.20210016

INTRODUCTION

The “coronavirus disease 2019”, known by the acronym COVID-19, is highly contagious, caused by the coronavirus SARS-CoV-2, and presents a clinical picture characterized by acute respiratory syndrome, which varies from mild to very severe cases. Due to its dissemination to several countries in the world, the World Health Organization (WHO) in January 2020 decreed a worldwide public health emergency, which was recognized as a pandemic in March.¹ In Brazil, the Public Health Emergency of National Importance (PHENI) was declared in February 2020.

Social distancing is one of the main measures to contain the disease having a significant impact on people’s routine¹, including students and teachers, due to the suspension of classroom teaching activities. This is a recommendation from WHO, the Brazilian Ministry of Health (MS) and the Ministry of Education (MEC), whose Ordinance Number 343 of 17 March 2020 replaced face-to-face classes with classes in digital media during the new coronavirus pandemic - COVID-19.²

Thus, social isolation in the country required the re-planning of many day-to-day activities, including teaching activities. Thus, the work of university professors has changed the modality of offering subjects with the implementation of new teaching strategies, such as the use of information and communication technologies (ICT) for emergency remote teaching (ERT) of undergraduate and postgraduate courses.

The ERT is characterized as a teaching modality that presupposes the geographical distance between teachers and students, being emergency due to the abrupt need for a pedagogical redesign of the institutions.

The concept of ICT expresses the convergence between information technology and telecommunications, grouping computational tools, and telecommunication means (radio, television, video, and internet), which facilitate the dissemination of information. Another widely used term is “new information and communication technologies (NICT)”, but which, according to the concept of ICT, may not be so new and, therefore, the term can be replaced by “digital information and communication technologies (DICT)”. Digital technologies are electronic equipment that bases their operation on a language with binary codes, through which it is possible to inform and communicating, interacting, and learning.³ In this study, we chose to use the term “information and communication technology (ICT)”.

In the teaching and learning processes, ICTs enabled changes, contributing to the resizing of strategies,

mainly changing the traditional use of time and space in these processes. Thus, the use of ICTs in teaching, specifically the Internet and educational software, has been of great interest for face-to-face or remote teaching.⁴

In remote education, the use of ICTs is very interesting especially in emergencies, when face-to-face activities cannot be carried out, including pandemics such as COVID-19, which the world is currently experiencing.

In this context, in the postgraduate education of a public university in the interior of *São Paulo*, the determination of the interruption of face-to-face activities coincided with the beginning of a subject on women’s health and primary health care (PHC) developed in weekly face-to-face meetings that were quickly rescheduled to be offered in the emergency remote education modality, mediated by ICT.

Due to the pressing need to use new practices to continue the subject in the emergency context of the pandemic, we justified our report of the still tenuous use of ICT in postgraduate education in the area of health and reflection on this experience, which seeks to answer the following question: does the use of ICTs in remote emergency education favor the teaching-learning process in postgraduate courses?

Thus, this study aimed to report the experience of using ICTs in emergency remote education of postgraduate Nursing courses during the pandemic of COVID-19.

METHOD

This is an experience report in teaching a subject of the Postgraduate Program in Nursing (doctorate and master’s degree) of a public university in the interior of the state of *São Paulo*, Brazil, in the first semester of 2020.

In an attempt to answer the questioning of the research, we used secondary data from the evaluation process of the subject in its entirety. Thus, eligibility criteria have not been established.

The subject was about the theme of women’s health in primary health care in a 60-hour workload, distributed from March 2 to April 27, 2020, taught by three professors. It also had the participation of a professor invited by *Universidade Nova de Lisboa* and three Brazilian speakers with expertise in the area of women’s health in primary health care. Eight regularly enrolled students also participated (nurses, psychologists, and physiotherapists) who were studying for a doctorate or master’s degree in postgraduate programs in Nursing, Gynecology and Obstetrics, and Psychology.

Classes were scheduled to take place in eight weekly face-to-face meetings at the Nursing School. Three

of these meetings were between 1:30 pm and 5:30 pm. However, with the COVID-19 pandemic and the implementation of distancing and social isolation measures, the activities changed, offering the subject in the remote modality from March 17, 2020, keeping the previously scheduled days and times. Thus, five meetings take place remotely, with an average duration of 3:00 hours.

For the continuity of the subject in the remote modality, teaching strategies were developed using the Moodle® and Hangouts Meet® platforms and the Google Forms® application.

Moodle® is the acronym for Modular Object-Oriented Dynamic Learning Environment, characterized as free software, supporting learning, executed in a virtual environment.

Hangouts Meet® is a communication platform developed by Google, which includes instant messaging, video chat, among other features. Video calls can take place on the cell phone or computer.

Google Forms® is a search administration application included in the Google Drive®, showing all the collaboration and sharing resources found in documents, spreadsheets, and presentations.

We followed all the ethical principles of research with human beings. Because this is an experience report, using secondary data, there is no need for the informed consent form and the approval of the Research Ethics Committee.

The approach based on the national and international theoretical reference on ICT-mediated teaching anchors the analyzes and discussions of this report.

EXPERIENCE RESULTS

The experience report is presented in three subcategories: a) development of the virtual learning environment and selection of remote teaching strategies; b) remote education planning and operation; c) evaluation of the subject.

a) Development of the virtual learning environment (VLE) and selection of remote teaching strategies

The development of the virtual learning environment (VLE) and the selection of teaching strategies for the five final meetings of the subject occurred in the week before the offer of the first remote meeting. The report on the suspension of face-to-face activities and continuity of the subject by remote education was through email.

Among several possibilities of virtual tools that could be explored for remote education, we opted for Moodle and

Hangouts Meet® platforms and the Google Forms® application, aiming at the development of classes, presentation of seminars, online discussions by video conference, recorded video lessons, chat, guided study and electronic forms. The choice was motivated by the experience of using Moodle® and Google Forms® by teachers in other subjects and by the possibility of online video conferencing offered by Hangouts Meet®, although this was a platform unknown to them. There was no training in the use of ICTs.

At the beginning of the pandemic, we developed a VLE for the subject in Moodle®. Through this resource, we offered an online classroom, where didactic and support materials for all classes provided for in the schedule were available in advance, including classes taught in person, which included multimedia files, recorded video classes, and interactive tasks, such as chat and guided study.

We selected Hangouts Meet® for discussions and seminar presentations via online video conferences.

For the evaluation of the subject, we selected two strategies to occur at different times. Initially, we applied an online electronic form using Google Forms®. Subsequently, to complete the course we had an online video conferencing via Hangouts Meet®.

b) Remote education planning and operation

The remote education planning and operation involved the adaptation of activities that were scheduled in person, such as lectures with guests, classes with professors, dispersion for study and construction of seminars, presentation of seminars, and completion of the subject with its evaluation.

Through Moodle, we sent weekly notices in advance to the students about the activities to be carried out and with the indication of supporting texts for study.

A lecture that would be given by a guest was replaced by a video lesson recorded by him and by a complimentary chat, both available via Moodle. The chat resource had technical problems and was suspended.

For the class, which would be taught in person by the professors, we planned a guided study, which was available on Moodle®. The teachers corrected the studies were and the feedback was sent via e-mail and Moodle®.

An online discussion was carried out through the Hangouts Meet® to promote the discussion that would take place in the chat and complement the content of the directed study which was attended by all students and professors.

The seminars were presented online by videoconference via Hangouts Meet®. The students were divided

into three groups, making up a pair and two trios, who could choose the presentation strategy. All of them opted for the presentation using the Power Point® program, shared through the Hangouts Meet®, and also sent a reflective text on the theme, requested by the professors.

c) Evaluation of the subject

The evaluation of the discipline used two resources as planned: an online electronic form and an online video conference.

The professors developed the online electronic form through Google Forms® and made it available to students via a link sent by email, before the online video-conference. It contained nine questions related to the achievement of the objectives of the subject, expectations for the contents covered, contributions of the subject to the training of students in postgraduate school and the research project, teaching performance, the contribution of the guests to the proposed themes, methodology used considering remote teaching, students' self-assessment and suggestions.

The analysis of the form showed that all students considered that the subject reached its objectives, met their expectations in the contents covered, and contributed to their training in the postgraduate school. For 62.5%, the subject also contributed to the construction of their research project; and for 87.5%, the guests contributed to the development of the proposed themes.

They considered the participation of professors as active for learning, and the methodology used was adequate for the development of content, considering the need for distance learning, imposed by the pandemic of COVID-19.

They mentioned suggestions such as the inclusion of complementary materials for study, the possibility of conducting the seminars individually and offering a hybrid subject, integrating the face-to-face and remote modalities in future opportunities.

The closing and final evaluation of the subject took place in a three-hour meeting promoted by online video-conference through Hangouts Meet®, which was part of the schedule of the meetings. All students and professors participated. The content of the evaluation by the students was analyzed through the notes of the professors in their field diaries about the reflections on the subject as a whole, the form of remote offering, and the technologies selected as teaching strategies. The organization of the data was carried out by surveying the themes emerging from the speeches. Based on these reports on

the offering of the subject in this new remote format, two themes emerged:

- Positive aspects of a remote teaching in the subject: new and enriching experience, appropriating new teaching-learning technologies, which may be used at other times, even for those who already used them, aroused the interest for new experiences; interaction with colleagues and professors, seeing their images, hearing their voices, talking and exchanging experiences and knowledge on the topics covered in the meetings; the possibility of being at home, with no need to travel, considering those who lived in another city; commitment of those involved to the success of the proposed activities; the importance of the professor as a mediator of the learning process for maintaining the subject with the adversities imposed by the pandemic; innovation of teaching strategies with the use of ICT.
- Negative aspects of a remote teaching in the subject: preparing the presentation of seminars remotely; feelings related to the presentation of the seminars, such as fear of error with the use of technology and synchronization of information with colleagues.

DISCUSSION

During the pandemic period, remote teaching strategies are fundamental actions to minimize the impact of the suspension of classes and guarantee the learning opportunity for students. For its implementation, the internet is the main tool, with the availability of online platforms, live classes on social networks, and sending digital materials to students.

With these considerations, this experience developed a VLE, which can be defined as a learning space allowing interactivity in the pedagogical praxis and with different ways of presenting its tools, with specific functions and different ways of interacting with the students. The use of VLE in Nursing education is corroborated by authors as a pedagogical option in the scenario of computerization of the various forms of communication, provided by ICTs, capable of optimizing the relationship between the Nursing professor and student, enabling to rethink educational practices and new ways of interactivity in the daily Nursing teaching.⁵

ICTs have been integrated into Nursing education in many countries around the world, for almost 20 years, reaching good levels of teaching effectiveness.⁶ How-

ever, until the advent of the COVID-19 pandemic, despite the rapid development of ICTs, traditional teaching methods were widely adopted as strategies for Nursing, as in this reported experience. Also, the professors maintained a passive attitude towards the application of ICTs in education, similar to a study carried out in Taiwan.⁶

In this context, for the remote teaching operation with the use of ICTs, we used several strategies and resources such as the recorded video class, with subsequent synchronous online discussion. This strategy allowed students the possibility of attending it at an opportune time, according to their availability, which proved to be effective when considering that in the pandemic, the time available is divided between daily activities and teaching and work activities. Also, this resource meets the concept of an “inverted classroom”, in which students access and use learning activities related to the class, before watching it, on their computers, smartphones, or tablets.⁷ This concept is an international trend in Nursing education, as evidenced in a Chinese study, which demonstrated that its implementation allows for more interaction between professors and students; encourages problem-solving; encourages cooperative learning and the use of knowledge to achieve the ideal of student-centered education; furthermore, it promotes the professional competence of Nursing students.⁸

Online discussions through videoconference were a challenge for professors and students, considering that this resource was being used for the first time. Faced with such a context, the professors connected before to test the virtual tool and help the students. All students joined the activity and the discussion flowed naturally, similar to a face-to-face activity, with the sharing of knowledge and experiences. This activity allowed the group to get closer after a few days of social isolation and reflection based on a new approach to teaching.

Although the Hangouts Meet[®] resource has been used in previous classes of the subject, the presentation of the seminars in a team with its use was a challenge in which the use of technological tools and the engagement of those involved were fundamental to successful execution and allow reflection on new possibilities for team interaction.

The evaluation of the subject showed that there were more positive than negative aspects in the remote teaching activities, demonstrating that the strategies developed and the ICTs used can be successfully incorporated into the teaching-learning process, including in the postgraduate program, especially when they are needed, as in this pandemic period. Similar results were corroborated by a study conducted in Southeast Asia, which

showed the positive and effective integration of ICT in Nursing education, in countries such as the Philippines, Malaysia, and Singapore.⁹

Before the pandemic, the literature highlighted that, soon, due to the challenges posed by technological advances and changes in society and the global economy, it would be imperative that higher education institutions (HEIs) and the country seek adjustments in reforms in higher education, which envision significant issues so that we could compete in the international market and consolidate as an academic reference in higher education.¹⁰

Hybrid teaching is characterized as any formal educational program in which a student learns at least in part through online teaching, with some element of student control over time, place, path, and/or pace. Through this experience report, hybrid teaching proved to be an interesting strategy to be used in emergencies, as in this pandemic. It can also be characterized as a mode of “reform in higher education”, which is necessary.¹⁰

We also stressed as in a recent study,⁶ that Nursing educators have a lot to do with different integration experiences, such as the one reported in this experience.

This report contributes to the health area, especially Nursing, by highlighting the potential use of ICTs to be gradually integrated into postgraduate programs, with positive repercussions for teaching, research, and health practice. Also, it enabled to establish characterizations and make some important reflections; however, it has a limitation of being an experience report related to a single subject. Thus, future studies with new research designs can strengthen knowledge about the use of ICT in postgraduate courses.

CONCLUSION

The use of non-face-to-face teaching strategies mediated by ICTs, with the use of online platforms and tools, proved to be a challenging and quite satisfactory experience in offering a postgraduate subject in Nursing. We highlight the importance of the engagement of the professors and students involved for the success of the teaching-learning process.

Also, the understanding of the dynamics of health events such as the pandemic of COVID-19, and the need to adapt to the recommendations of health organizations, aiming at collective well-being, demonstrated the importance of planning teaching strategies that go beyond the exclusively face-to-face modality, which make up hybrid teaching models and meet the unpredictability of everyday life.

The non-face-to-face teaching modality allowed the students to get closer in a moment of social distancing

and the reflection of the teaching “way of doing”, based on a new teaching approach modality, in which knowledge and experiences were shared through a virtual environment. The adherence of the students and the integration between them and the professors deserve to be highlighted as an expanded approach in this educational practice, innovative for both.

In this scenario, it is evident that we are going through a moment of transformation of pedagogical logic, which requires our knowledge to sustain the offer of quality higher education. Thus, there is a demand for an adaptation of the teaching process, for the reorganization of lesson plans, for the redefinition of teaching and assessment practices by students and professors.

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