

Creative Strategies to Teach Healthcare Professionals Using iPad Technology

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Abstract: PUCRS University has been promoting the use of iPads in its classrooms in the light of student familiarity with these mobile devices. The opportunity then arises to use such resources to improve and stimulate the teaching and learning processes. Competence in manual skills and critical thinking are expected from health professionals in order to carry out their work. However, the development of these skills is restricted to real opportunities in the field of practice at a time when the student is experiencing supervised assisted practice. The objective of this article is to report an experience with the use of iPads in the teaching of nursing and nutrition undergraduates, as a creative educational methodology and a tool for the simulation of skills and critical thinking, helping to increase general and specific cognitive abilities in support of problem solving.

Key words: Simulation, information and communication technology, nursing, nutrition, teaching.

1. Introduction

ICTs (information and communications technologies) in the world today have led to profound changes in virtually all activities of modern society, such as in work, education, health and arts and culture, among others [1]. One of these modifications is directly reflected in the classroom, in as much as a significant year-on-year increase in the presence of mobile devices has been observed. In light of this scenario, the inclusion of these resources is believed necessary in differentiated pedagogical strategies that stimulate work, research, leadership, dialogue and collaboration skills.

Many authors have worked on the planning and design of mobile phone-based tools [2-3], while others have developed the use of mobile devices in different educational areas [4-5]. However, there are still few studies related to the use of these devices in the field of health education [6-7].

In this sense, the expansion in use of technological resources in university classrooms emerges as a necessity that, if implemented, can contribute to the improvement of educative action. However, a classroom equipped with technological resources is not enough; there needs to be a consistent pedagogical proposal in keeping with the IPP (institutional pedagogical project). To this end, the university has established the MobileLabs (LabsMoveis) project that aims to develop, apply and evaluate appropriate teaching strategies adapted for the use of mobile technologies in the university classroom.

According to Moraes [8], students learn through research, participating in scientific production together with their fellow classmates and thus, reconstructing knowledge and practice. Therefore, it is necessary that students assume the role of protagonists in this process and share their researches with colleagues by means of dialogue.

Beyond this context, it is expected that health professionals have the technical skills and clinical thinking useful for patient assistance. However, the practice of skills alongside the patient is limited and

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should not compromise patient safety. Case simulations can be used aimed at making the laboratory learning process as close to reality as possible. According to Howley and Martindal [9], “This methodology has proven effective for various reasons, including the accessibility of patients, control over external factors, and the standardization of patient problems. Standardized patients allow faculty to gain a better understanding of the students’ skills in interpersonal communication, data gathering, problem solving, and the management and synthesis of clinical information” .

One of the major problems that professors face in the health area is the teaching of psychomotor skills in a way that it becomes a satisfying experience for students [10]. With technological advances and new pedagogical approaches, simulations have opened up important areas in learning strategies [11]. Simulation is defined as a learning process that amplifies, mimics or replaces real-life situations and allows the student to think through a clinical situation that will lead to a decision [12].

ICTs serve as a further tool to support the professor as they allow exploration of their use to form simulation scenarios that enable the student to practice or be involved in abstract (or real) situations in training, even if they have not yet experienced them in reality. It can help promote the development of competent health professionals to transition into the complexities of the health system [1, 13].

In Brazil, the teaching of professions in the health area, such as nursing or nutrition, still tends to occur in a traditional manner in which lectures are based on explanation of the subject. In this context, the School of Nursing, Nutrition and Physiotherapy, of the Pontifical Catholic University of Rio Grande do Sul, which is part of the MobileLabs Institutional Project, is innovating the teaching of technical skills and communication in health through the use of pedagogical mobile devices. The objective of this article, therefore, is to report an experience with the

use of these resources as a support tool to the process of teaching and learning.

The paper is organized as follows: Section 2 explains the different methods used in this project; Section 3 presents results and discusses the findings; Section 4 contains the conclusion.

2. Methods

This experience report was developed in undergraduate classes of the Faculty of Nursing, Nutrition and Physiotherapy, within the MobileLabs project, in 5th level disciplines of the nursing (Clinical Nursing in Adult Health and the Elderly) and nutrition (Maternal and Child Nutrition) courses. In the case of nursing, the mobile devices were used to implement simulations and reinforce the learning of manual skills in the practice of techniques related to care. In nutrition, the objective was to develop communication skills in health through the production of videos using tablets.

The mobile devices were used as a way of supporting the teaching and learning processes at various times in the nursing and nutrition undergraduate courses. In this article, the report and discussion will be presented using three proposals for the pedagogical use of these resources.

2.1 Educational Videos for Nursing Education

The first proposal relates to the development of educational videos on technical nursing procedures, indwelling or intermittent urinary catheters and nasogastric and nasoenteric tubes. These videos offer the student an overview of the technique to be learned. They were presented in the classroom accompanied by the necessary explanations and were also later available in the LHC (laboratory of human care) where students could use them as a tutorial to develop their skills further.

It was observed that the availability of these videos promoted greater use of the LHC. Students use this facility to perform and perfect the necessary skills for

nursing practice. In this way, the videos serve as a support tool for the learning process and as a model to be followed, reinforcing the learning of technique.

2.2 Seminar with Video Production

The second proposed use of mobile devices consisted of conducting a seminar as a part of the nutrition course. According to Gessinger[14], a seminar is defined in its traditional form as a didactic procedure with study and debate of a proposed theme that is coordinated by a professor with the use of scientific articles. A seminar was proposed for this nutrition course with the creation and discussion of videos produced by students, based on a specific theme. During this activity, a basic text was distributed as a starting point for research. Students were then free to explore the subject as they wished and in a location of their choice.

Three distinct periods are required for the development of this methodology: preparation, development and final evaluation. In this case, these steps were adapted to the use of tablets in the classroom, allowing the use of different languages for the discussion in the large group.

During the presentation, comments related to self-image, manner of speaking, and also the video content presented were all in common. The discussion was very rich since the videos produced had different approaches, simulating real everyday life situations, followed by pertinent guidance as to content or create hypothetical episodes of television programs or lectures. This gave the spectators an elucidated vision of the academic content, making comprehension of the subject matter more accessible.

Another pedagogical procedure was critical reflexion where students were motivated to study and prepare a specific technique. After filming the performance of the procedure, they made a reflexive, critical analysis of the successes, difficulties and skills mastered during the event. The results and comments of the students were similar to those reported for the

seminar using videos. This same pedagogical approach can also be used in other situations not involving a technique, such as for hand-over at the end of a working shift. This is a required ability in nursing that necessitates knowledge, critical thinking, determination of priority and communication skills; visualizing oneself during the shift handover helps to identify weaknesses and learning needs.

In order to broaden the discussion of content from various points of view and place the student as an active subject in their learning process, the use of the seminar as a method of teaching could become an interesting alternative as it allows the student to perform the analysis, interpretation, critique, hypothetical thinking, suppositions search, data collection and organization, and comparison and application of facts in new situations [15].

2.3 Clinical Case Simulations

It is well known that case simulations have the great advantage of preparing students for problem situations that will be encountered in real-life assistance scenarios. The third pedagogic proposal directly relates to common practices in the health areas, with an auscultation application (heart, lungs and abdomen) being used in this instance. It was possible to bring an element of realism to the clinical case using this application in conjunction with the innovation of adding an amplifier to the stethoscope bell, connected to an iPad.

The LHC was transformed into a hospital unit with patients having different pathologies and treatment needs, requiring competencies and skills for their care. In this context, it was possible to apply the nursing process. Under the supervision of a professor, the student examined a manikin that simulated a specific disease. In the course of the physical examination, the professor evaluated the performance ability of the physical exam and the knowledge of semiology and semiotic technique. During examination of the manikin thorax and abdomen, the professor created

different sounds of auscultation related to the specific clinical case with the help of the applicative. The student was required to identify and correlate the findings with the clinical case in question, which gave realism to the laboratory experience.

The LHC can be transformed into different health units, such as an Emergency Room, with simulations of patient arrival and intake, improving interview skills and the determination of priorities in patient care.

It is known that some situations, such as CPR (cardiopulmonary resuscitation) are generators of stress for students. Stress inhibits and impairs professional performance and learning, leading to errors, adversity and frustration during patient assistance. In order to minimize this negative experience, videos were created with different types of heart monitoring that allowed the student to gain familiarity with situations such as cardiac arrest and CPR, during practical laboratory lessons.

The simulation led to learning in regards to ways of dealing with emotional situations of loss and stress that are very common at these times. Resuscitation was not always effective, due to either severity of the case or the inefficiency of the assistance provided. It is known that the management of stressors in health related professions is extremely important. Sasso and Souza [16-17] report that the simulated environment of computer-assisted learning causes the student to see the simulated reality and act upon it, which provides them with a new and stimulating learning opportunity [17].

Melo and Damasceno state that the professor can explore the use of computers in many situations that allow simulation, facilitating the understanding of actual or abstract realities of which the student is still not prepared to experience [18].

3. Results and Discussion

The proposals lead us to reflect on one of the principles of pedagogical mediation in the university

classroom with the use of ICTs [19], the principle of pedagogic presence and learning. According to Ref. [19], “the pedagogical presence of the professor through listening and dialogue, in person or virtually, creates situations of interaction that aim to motivate the student to learn in the context of the integral formation of the person”. This pedagogic principle gives new meaning to the act of teaching and learning, as the student does not necessarily require the physical presence of the professor, who in turn does not need the student within the formal space of the classroom.

A recently published Australian study reported the STAR (sensitise take action and reflection) model, which refers to the need to raise awareness on the subject, act and reflect on what happened. The authors identify this process as the key to successful learning [12]. Teixeira and Felix [20] in an integrated review on simulation in nursing education concluded that the application of educational strategies in the laboratory could be associated with computer technology, so as to support face-to-face teaching. They also report that there is an acceptance by professors and students of innovative ways of teaching, particularly the use of simulations [20-21].

Innovation in nursing education using a participative and active methodology shifts the direction from the learning of content to a meaningful learning experience, with the focus on the student and realism of assistance. No reports were found in the scientific literature of the use of iPads in the simulation of real-life nursing scenarios.

Another feature strongly observed in the development of these methodologies is mobility, which is possible because of the use of mobile devices. There are no limits imposed for the creation and the student feels free to explore different areas of the university and access information in several ways. This leads to the concept of mobile learning, which according to Pereira [22], is defined as the use of mobile and portable devices used to facilitate access and information in educational programs. According

to Ref. [23], mobile learning embodies the use of mobile communication technology to enable the learning process anytime and anywhere.

According to Ref. [24], although education and technologies are connected, the teaching and learning processes using these new technologies are global challenges and there are still no clear answers. In this sense, this article integrates the efforts of the informatics in education community in the construction of pedagogical possibilities for using technologies, especially tablets, in the classroom.

4. Conclusion

In summary, the use of tablets for the teaching of simulation techniques, besides improving the technical skills and competencies of students in the health area, has an important role in regard to the ethical-legal aspects and patient safety; it is believed that a decrease in adverse events will occur, and therefore, the patient risk in the face of student inexperience. Furthermore, the integration of mobile devices in the university classroom contributes to the expansion of general and specific cognitive skills, stimulating creativity and support, enhancing the initiative for problem solving and for an appropriate process of health communication.

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