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REFLECTION STUDY

Advantages and limitations of Serious Games in nursing education: potential in the post-COVID-19 context

Ventajas y limitaciones de Serious Games en la educación de enfermería: potencial en el contexto post-COVID-19

Vantagens e limitações do Serious Games no ensino da enfermagem: potencial no contexto pós-COVID-19

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The presence of technology in today's society is indisputably growing, and has caused profound changes in this generation, ranging from forms of interpersonal relationships to changes in practically all activities in modern society, such as in art, culture, health and education[1]. In their scope review, Barbosa et al[2] observed that the use of technologies such as the virtual learning environment, simulation, mobile applications was important in the teaching-learning process, as, among other benefits, it motivated students and developed skills and competences based in meaningful, effective, flexible, and autonomous learning.

Distancing technology from teaching-learning processes does not seem to be a good idea. Education needs to understand technology as a great ally to reach its goals, and glimpse how countless are the possibilities its use can represent, such as the use of e-learning, virtual learning environments, clinical simulators and virtual reality[3].

The pandemic caused by the respiratory syndrome virus (Coronavirus SARS-CoV-2), called COVID-19, started in Wuhan, China and declared by the World Health Organization (WHO) in March 2020[4] has brought even more impacts on education, causing closure of educational institutions around the world[5] and making urgent initiatives to reduce the gap in training, including for health professionals.

Coincidentally, the year in which the pandemic started by COVID-19 was the year chosen to be the year of Nursing, with the publication of the Nursing Now campaign, which aimed to propose innovative strategies for valuing the nursing workforce, which is a priority on the global health agenda[6], considering the large and growing need for nurses around the world.

Nursing is notorious in the context of health care not only for the large number of actions and procedures performed with the patient, but for corresponding to more than 50% of the health workforce[6], and its training was also greatly affected by the control measures to the pandemic, such as the impossibility of in-person classes, which highlighted the large gap between the possibilities of using technologies for nursing education and the extent to which these technologies are applied, either due to the necessary investment or due to the lack of preparation of educational institutions and teachers[7].

Among the possible technologies, simulation stands out, as it brings the student closer to practical reality, stimulates the training of skills and especially clinical reasoning[2], and in the pandemic context, in which the speed in preparing the workforce was crucial, simulation is also crucial. proved to be efficient, as in the example of Canada, where it was used to prepare professionals on a large scale to work on the front lines of COVID-19[8].

Simulation can be defined as a technique, not a technology, that can amplify real experiences, which are guided, evoking substantial aspects of the real world in a complete interaction[9], this joining of real elements in a controlled scenario, created with learning objectives defined, totally safe, in which, with the help of the teacher, the learner has the opportunity to learn, relearn, develop their clinical reasoning, decision-making[8,10], among other benefits of simulation widely discussed and published.

Among the possibilities that simulation presents, its typology, virtual simulation provides practice time and can improve the student's general ability, such as in handling difficult situations or decision-making in the clinical environment[11]. The Serious Game (SG) has been used and well related to health promotion and prevention[12], therapy and rehabilitation[1], and much of its use in simulation proposals, and in the identification of risks to the patient[3;14].

The objective was to discuss the advantages and limitations of the Serious Game (SG) in nursing education and its potential in the post-COVID-19 context.

Methodology

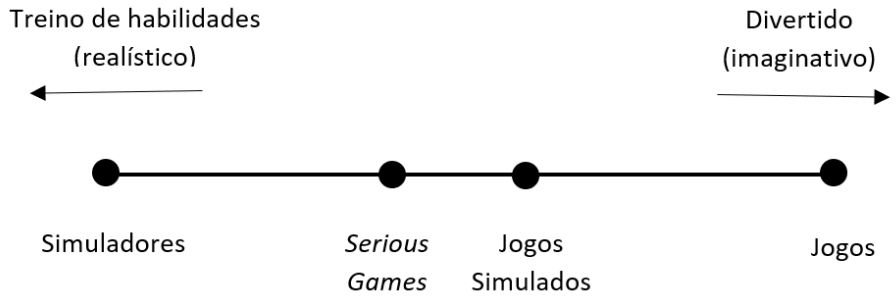
This study is a theoretical reflection. This methodological choice allows researchers to instigate critical reflective thinking on a particular theme, through the search, selection, and intentional analysis of the bibliographic collection to examine or analyze the fundamentals of the proposed theme[15]. The selection and composition of the sample took place between the months of September and October 2021 in LILACS, BVS and Google Academic databases by the health descriptors "Educational Technology"; "Nursing Education"; "Realistic Simulation" and "Clinical Reasoning"; "Video Games" and the keyword "Serious Game".

Results and Discussion

The expression Serious Game appeared at the end of the 1970s, before all the diffusion of technology in today's society, in which it already presented the educational perspective of games[3], but it was in 2005 that Stokes presented as a definition the possibility of uniting a pedagogical proposal with the nature of the game, it can be said that Serious Games are games designed to entertain, educate, train and change behavior[13].

It is important, however, to understand that Serious Game is different from Clinical Simulation and can even enhance the simulated experience, when applied at the appropriate time in the learning process[16].

Figure 1. Spectrum of the computer game. Campinas, SP, Brazil, 2021



Source: Adapted from Ricciardi[3].

Note that the SG stands between simulated games and clinical simulation, in which skills are also trained. The emphasis on the use of GS is on teaching and developing critical and reflective reasoning, decision making and group games, teamwork, communication and solving the case presented[16].

In a study on the potential of GS in nursing education, it was shown that the use of GS was significant in teaching critical reasoning[17] an essential skill for nursing professionals, especially in situations of crisis or imminent risk of death.

Some developed SGs denote its application potential for nursing education at different levels of care, and even its application in health education. The precursor in the Brazilian scenario, it can be said, is the e-baby[1], developed for teaching Semiotechnics and semiology in neonatal nursing for preterm infants. Subsequently, the SG e-baby family was developed, aimed at parents and caregivers of premature infants, for health education of families in the care of premature infants.[12].

Johnsen et al[18] developed a GS for teaching clinical reasoning and decision making for nursing students in the context of home care, in patient care with Chronic Obstructive Pulmonary Disease (COPD).

In the context of primary care, during the COVID-19 pandemic, a SG was developed to teach the technique of Oncological Cytology exam collection[19] to undergraduate nursing students at a public university in the interior of São Paulo, in which they are presented ten scenarios in which the student must decide according to what is proposed in the game (data not yet published).

Advantages of SG in the training of health professionals

Replication at different and countless times, as well as its distribution outside the classroom, by an unlimited number of students anywhere and repeatedly, without risk to patient safety[3].

Possibility of inserting the student in unusual situations, but in which their conduct needs to be assertive, patients with rare diagnoses or difficult situations[3]. For example, an SG was developed for teaching blood management in the context of orthopedic surgery, where blood control is particularly important and blood loss can be fatal[20].

Possibility of feedback directed at the student's performance[16]. Performance feedback is necessary for the student to gain real benefit from their experience. Four types of feedback can be considered in games in an online learning environment: immediate feedback, final feedback, knowledge of the correct answer and elaborated feedback. Koivisto identified that nursing students in his study preferred immediate feedback about their performance[14],

and it seems that changing the patient's clinical condition during the game is the best type of feedback.

Lower cost, as they do not use custom technologies, SGs have a reduced cost compared to other simulators, as well as their development and deployment time, as their support technology (hardware and software) is widely disseminated[3].

Use in various devices, precisely because they use widely known support technologies, it is possible to play SG from mobile devices, smartphones[3], which expands its access among students and reduces costs for institutions.

Training. In his comparative study between Serious Game and traditional simulators, Ricciardi also identified that the entertainment factor supports learning, as the student is challenged to obtain better scores and reach a specific goal, while in traditional simulators, developed solely for training, there is no purpose to entertain the user[3].

Teaching clinical reasoning and decision making[14]. Nursing students could practice their clinical reasoning and decision making in a completely controlled and safe environment. Johnsen et al' SG[18] aimed at teaching clinical reasoning and decision-making skills to nursing students caring for patients with Chronic Obstructive Pulmonary Disease (COPD) in home health settings, which was considered realistic and clinically relevant for nursing learning in the face of need for nurses' conduct in this context of care. Such skills are highly necessary in nursing practice, which remains at the patient's side 24 hours a day and needs to be alerted to changes in the patient's health condition for fast and assertive decision-making.

Finally, it is important to consider, a study published in 2017[21] concluded that simulation-based games seem to be the ideal environment for experiential learning to take place. Another study, this one from a systematic review of 2021[10], pointed out that SG was more effective for nursing learning when compared to other teaching strategies, in which nursing students undergoing SG had better learning outcomes .

SG Limitations

Campaign, in its study on the panorama of Serious Game in education[22] analyzed a series of GS developed in the context of health education and identified in these studies that motivation can be a limitation, as some students may not feel interested in the Serious Game strategy, considering this to be an innovative and recent strategy in many courses or , as in the case of the Chon study[23], in which 1,600 medical students were invited to participate in the study on SG Emersive, only 140 accepted, a fact attributed to the 140 already knowing the game, and therefore feeling motivated, despite the fact that the others did not show interest in the lack of knowledge of the strategy.

The number of cases students are exposed to, and the lack of long-term monitoring are also considered limiting factors[22;23].

Blanco highlights the limitations of empathy in game design, in the context of queer culture (associated with the LGBTQIA+ movement), in which the design itself limits the user in terms of the touch or look of the real experience[24].

The potential of technology in nursing education in post-COVID-19

The pandemic caused by COVID-19 challenged the organizational structures of the entire world society, and in nursing education, the strategies developed by professors and institutions, called "emergency education" revealed the distance that still existed between the training of these professionals and the use of new technologies, especially in Brazil, which according to Silva et al[25] had its challenge tripled, with the need to value the nursing profession, the context of social vulnerability of a developing country and the pandemic with its restriction measures for virus control.

When discussing medical education, Goh and Sandars[26] state that the disruptive change resulting from the COVID-19 pandemic brought technology as an ally in a fast and innovative way to maintain teaching and learning, and the use of emerging technologies, such as intelligence for adaptive learning and virtual reality, are likely to be essential components of transformative change and the future of education.

The inequality in the access of nursing students to remote teaching and the lack of knowledge of teachers[25] as for alternative forms of teaching and technological tools, it leaves a vast field for a new look at the possibilities of using new technologies in nursing education. The destabilization in education, caused by the pandemic, brought to light the capacity for innovation, which should be understood as the key to "not replicating the failures of pre-COVID systems", but joining forces to "rebuild better", developing systems improved for learning in general5, and nursing. The potential of SG, such as offering experiences in a safe environment, active and meaningful learning, support for training, with solid concepts, based on critical thinking, problem solving, planning and adaptability[10] make it suitable for nursing education.

Final Considerations

The integration of games, Serious Games, mobile devices, clinical information, systems, social networks, and virtual learning environments to bridge the gap between theory and practice are evidently necessary in nursing education, and the COVID-19 pandemic has demonstrated how far we are in this good integration.

The use of the Serious Game (SG) or "Serious Game" has been shown to be an efficient way to combine technology with the teaching of health professionals, specifically in Nursing, in view of the benefits of feedback to students, reflection on their own learning, clinical reasoning and skills training, lower cost compared to other virtual simulation technologies, large-scale availability on mobile devices and smartphones, and the satisfaction that comes from entertainment.

Although there are limitations, and the SG is not effective isolated in the teaching and learning process, when associated with other strategies already disseminated in the classroom and clinical simulation, it has been shown to be

useful in Nursing teaching and learning. Its potential for the practice of clinical reasoning in a safe and risk-free environment for patient safety is highly relevant.

It is essential to increasingly disseminate this strategy to the curriculum and training of nursing professionals, so that they arrive more prepared in the real clinical environment.

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