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Quality and safety olympics at the sentinel public university hospital

Olimpíada de qualidade e segurança em hospital universitário público sentinela

Izabela Melo Garcia^{1,*} 

Nathalia Vasconcelos Fracasso¹ 

Alexsandro de Oliveira Dias^{II} 

Vivian Biazon El Reda Feijó^{II} 

Renata Pedrão Leme

Motomatsu^{II} 

Maria do Carmo Fernandez

Lourenço Haddad^I 

ABSTRACT

Introduction: The quality of health care aims to ensure safe and free from unnecessary harm care to the customer. **Objective:** Describe the experience of the Risk Management sector at the quality and safety awareness event in a sentinel public university hospital. **Method:** This is a descriptive experience report study that used the active methodology called Gamification to promote patient quality and safety. The event was held in April 2018, in a high-complexity university hospital located in northern Paraná, inserted in the Sentinel Hospitals Network of the National Health Surveillance Agency. **Results:** Approximately 325 people were involved among health professionals, administrative technicians, teachers, residents, academics and external community who participated in the various proposed activities. Nine challenges were made for the dissemination of knowledge on the subject. Concurrent with the activities, the judging committee met to assess the challenges and score points, displayed on the scoreboard posted in the hospital hall. The award of the winning team was a lunch at a renowned restaurant, and for the others, certificates and medals. **Conclusion:** The use of games and dynamics is a pedagogical tool that provides learning and collaborates in the dissemination of the theme of quality and safety, as well as provides interaction between employees. At the end of the event, the participants' satisfaction survey was applied, being rated between excellent and good by 90% of respondents.

KEYWORDS: Continuing Education; Patient Safety; Quality of Health Care; Risk Management; Nursing

RESUMO

Introdução: A qualidade da assistência à saúde tem como finalidade garantir uma assistência segura e livre de danos desnecessários ao cliente. **Objetivo:** Descrever a experiência do setor de Gerência de Risco no evento de sensibilização sobre a qualidade e segurança em hospital universitário público sentinela. **Método:** Estudo descritivo, do tipo relato de experiência, que utilizou a metodologia ativa denominada gamificação, para promoção da qualidade e da segurança do paciente. O evento foi realizado em abril de 2018, em um hospital universitário de alta complexidade localizado no norte do Paraná, inserido na Rede de Hospitais Sentinela, da Agência Nacional de Vigilância Sanitária. **Resultados:** Houve a participação de aproximadamente 325 pessoas, entre profissionais de saúde, técnicos administrativos, docentes, residentes, acadêmicos e comunidade externa que participaram das diversas atividades propostas. Foram realizados nove desafios para disseminação do conhecimento sobre a temática. Concomitante às atividades, a comissão julgadora se reunia para avaliação dos desafios e contabilização de pontos, divulgados no placar afixado no hall do hospital. A premiação do time vencedor foi um almoço em restaurante renomado e, para os demais, foram entregues certificados e medalhas. **Conclusões:** O uso de jogos e dinâmicas constituiu-se em uma ferramenta pedagógica que proporciona o aprendizado e colabora na disseminação da temática de qualidade e segurança, além de proporcionar a interação entre os colaboradores. Ao término do evento foi aplicada uma pesquisa de satisfação aos participantes, e ele foi classificado como ótimo e bom por 90% dos respondentes.

PALAVRAS-CHAVE: Educação Continuada; Segurança do Paciente; Qualidade da Assistência à Saúde; Gestão de Riscos; Enfermagem

^I Universidade Estadual de Londrina (UEL), Londrina, PR, Brasil

^{II} Hospital Universitário, Universidade Estadual de Londrina (HU-UEL), Londrina, PR, Brasil

* E-mail: izabelamelo@hotmail.com



INTRODUCTION

Quality of care has become an aspirational goal of health institutions around the world to ensure harm-free healthcare with greater patient safety^{1,2}. According to the World Health Organization (WHO), “patient safety is the reduction, to an acceptable minimum, of the risk of unnecessary harm associated with healthcare”³.

In view of this, the Brazilian Ministry of Health carries out several actions to ensure safer healthcare and thus prevent and reduce the occurrence of incidents, encourage a safety-oriented culture, continuous process improvement and the dissemination and implementation of good practices^{3,4}.

Among the actions conducted by the Ministry of Health, the National Patient Safety Program (PNSP) aims to encourage training on patient safety for professionals and managers working in healthcare and healthcare management; articulate the topic in health education curricula and share information with healthcare professionals, users and society to promote patient safety and strengthen the safety culture⁴.

Therefore, in commemoration of the month of implementation of the PNSP by Ordinance n. 529, of April 1, 2013, by the Ministry of Health⁴, considering the principles and objectives of the PNSP and with the purpose of disseminating culture and consolidating quality and safety practices, the institution under study held a training program that sought to engage all workers, employees and the academic community in an Olympiad.

The event used an active methodology that promotes meaningful learning and epistemological curiosity, by triggering the interest and engagement of the subjects in the educational process⁵. Additionally, the method helps them understand the importance of the proposed topic, considering the subjectivity and how each individual builds and produces his or her own knowledge^{6,7}.

Given the above, this experience report aimed to describe the experience of the Risk Management sector in the awareness-raising event about quality and safety in a sentinel public university hospital.

METHOD

This is a descriptive experience report study conducted in a public university hospital of high complexity, located in northern Paraná state, Brazil. The hospital is a member of the Network of Sentinel Hospitals of the National Health Surveillance Agency (Anvisa).

For the event, we used an active methodology called gamification, which consists of an educational strategy that uses game elements outside the game context in order to drive interaction, engagement and better learning^{8,9}.

The event took place from April 11 to 19, 2018. The target audience of the event were all the employees of the four Boards

(Superintendent Board, Nursing Board, Clinical Board and Administrative Board), statutory employees, outsourced employees, public calls and also the workers from the Health Sciences Center (CCS), like professors and the academic community (senior students and interns of the nursing, medical and physical therapy specialties).

The event was planned in February and March, with ten meetings held between the Management Group, lasting approximately one and a half hours each. The regulation was successively amended following the suggestions made during the meetings with the organizers.

A Judging Committee was formed to evaluate and score the activities carried out by the teams. Two members from each board and three representatives from the CCS were chosen to meet and prepare directions for the organizers.

All those interested were also able to register for free at the hospital's Nursing Research and Education Division (DEPE), either by telephone or in person, and fill in a form for a predetermined period.

To promote the event for the internal community, in March we visited all administrative and healthcare sectors and presented the event's program to them. We also had photo sessions with the teams in front of the Olympiad symbols during the three work shifts (morning, afternoon and night). Later, the photos were used to decorate the event and at the end the participants received their respective photos in teams.

After the registrations were made, the organizers formed the teams, in isonomic quantities, mixing workers from several areas, to drive interaction and integration between them. If any worker decided to withdraw from the Olympiad during the period of the event, this worker could be replaced, and the team captain should report the replacement to the event coordination.

The composition of the team members and colors corresponded to the Olympic rings (blue, black, red, yellow and green). Each team elected a tutor who was available to be consulted about the activities performed during the event. If a tutor had questions about the process, he or she could consult with the coordinating committee and provided the team members with the requested information as soon as possible.

During the entire month of April, nine challenges were made for the five participating teams: 1) to create a logo, a team name, a war cry and election of the team captain; 2) invitation to patient safety and worker health lectures; 3) “surprise” playful activities; 4) experience report of retired employees; 5) outline of risks in the healthcare, administrative and environmental areas; 6) incentive to blood donation; 7) scavenger hunts; 8) collecting tax receipts and food for voluntary causes and 9) talent show.



RESULTS

The “UH Olympiad: Quality and Safety in Focus” was the first Olympiad event held at the institution and promoted by the Nursing Board, in partnership with the CCS Nursing Department and with the support of the other boards. The strategy was adopted to improve quality and safety practices in the organizational context.

There were 150 registrations for participation in the Olympiad and no dropouts occurred during the conduction of the challenges. To assess the results of the event, we verified the dynamics completed by the teams that scored in the activities, which will be presented below.

Challenge 1 - Creation of logo, team name, war cry and election of team captain

Each team had to follow the rules to fulfill the tasks considering the topic of the Olympiad, of unprecedented and original nature, in Portuguese. The results could not cause material or moral damage to third parties nor contain plagiarism or double entendres that implied discrimination and/or prejudice.

The names created by the teams in this challenge were highlighted (Figure 1): team I - blue: “What was that fall?”, II - yellow: “Super patient safety”, III - black: “Connected with patient safety”, IV - green: “Target team” and V - red: “Pure blood”.

Custom t-shirts and armbands were made for each team captain in the respective colors of their team. The rest of the team members received some props in the color of their team to customize their outfit during the challenges and facilitate identification by the event organizers.

Challenge 2 - Invitation to worker's safety and health lectures

The teams were challenged to invite the largest number of people to lectures called: “6 World Health Organization International Patient Safety Goals” and “Occupational Risks in the Workplace”. The two lectures were attended by 136 participants,



Source: Archives of the Nursing Teaching and Research Division, 2018.

Figure 1. Logos designed by the teams inspired by the topic Quality and Safety in Focus. Paraná, Brazil, 2018.

invited by the respective teams, and a presence list was used to assign the score to the respective guest's team.

Challenge 3 - “Surprise” playful activities

We chose not to disclose the rules of these playful activities for the diagnosis of training needs on the international goals of patient safety and Regulatory Standards (RS) on Occupational Health.

For these activities, we used the communication Error Game, in which participants identified inadequacies and potential health incidents due to communication failure in the hospital setting. The other game involved marking the places where pressure injury could occur in hospitalized patients.

In addition to these activities, the topic of “Occupational Safety and RS” was addressed using a word search with the main RSs. It is noteworthy that the participants themselves mobilized to choose group members from different areas to facilitate the resolution of this challenge.

Challenge 4 - Inviting retired workers to report successful quality and safety experiences

Each team provided the opportunity for a retired worker to report his or her experiences with quality and safety during their professional career. The hospital's entrance hall was decorated with a red-carpet for the reception of the retirees on their way to the podium, in order to recognize the value of their experience. The retirees held a ring in the color of the team they were representing during their speech.

Each presentation lasted approximately 15 minutes, and at the end of the presentation, the directors of the institution thanked those workers and gave them an honorable mention, followed by a photo shoot.

Challenge 5 - Outlining risks in healthcare, administrative and environmental areas

The teams identified three risks in each area and described the strategies for their mitigation. The intention was to use this activity as a basis for discussion and elaboration of risk maps that were delivered to the hospital units. To illustrate, some risks listed by the teams and the strategies to mitigate them were presented.

One of the risks identified was related to patients who stand up on the stretcher during their stay in the emergency room to charge the phone in the power outlet located near the ceiling. As a proposal, the team suggested closing these outlets and orienting patients to avoid using the outlets so as not to overload the power grid.

Another identified risk concerns furniture and work equipment with inadequate ergonomics (desks, chairs, telephones and computers). The proposal would be the analysis of ergonomics in



relation to furniture and work equipment to provide adequate conditions and protect workers' health.

In addition, when visiting the care units, the teams surveyed some risks related to medication errors due to lack of attention in the preparation, because the nursing station is in a place of great circulation of the multidisciplinary team. Faced with the risk, the team proposed the identification of high-alert and psychotropic drugs prepared in the pharmacy, along with double checking, adoption of the 12 rights of medication preparation and administration, and transfer of the nursing post to another location in order to reduce outside noises.

Scores were assigned to each action/strategy done by each team to mitigate the risks found in the three listed areas.

Challenge 6 - Encouraging blood donors and registration in the National Register of Bone Marrow Donors

During the Olympiad, we counted 69 people who donated blood, a 26% increase in comparison with the previous month. For scoring purposes, the Management Group requested the list of donors who sought the Blood Center and attributed their participation in the event and the color of the corresponding team.

Challenge 7 - Scavenger hunts

The five teams joined the hand hygiene scavenger hunts, the trash bin game on the correct disposal of hospital waste and the Q&A about Personal Protective Equipment (PPE) and Collective Protection Equipment (CPE), in addition to discussing the proper use of fire extinguishers and conducts to be followed in fire situations. The scavenger hunts had the support of the Hospital Infection Control Commission.

To evaluate the correct hand hygiene technique, we opted for the black light dynamics. A fluorescent solution mixed with gel alcohol was used. The participants then performed the steps of correct hand hygiene and, afterward, inserted their hands in the box with black light, which showed the points where the cleaning had not been done correctly.

After hand sanitizing for 30 seconds with the fluorescent solution and gel alcohol, the scavenger hunt evaluator oriented the participants to insert their hands into the light box (Figure 2). If the technique had been performed correctly (full hand coverage with fluorescent solution), the team representative would score points for his or her team.

Participants who did not perform their hand hygiene correctly could repeat the test, since the objective of this challenge was to consolidate safe health practices.

To perform the trash bin game, two representatives from each team were chosen. Five trash bins were arranged according to the color and type of waste to be disposed of (black, white, green, sharps and red garbage bags). Different types of waste (diapers, gauze, equipment, paper towels, plastic, needles, fictitious anatomical parts, among others) were distributed on the

table and the participants chose which color of the waste bag was the correct one for waste disposal.

At the end of the activity there was clarification of questions from the team participants about the correct destination of the scavenger items. To share the results, posters were prepared and posted at strategic points of the hospital, according to the main weaknesses found on the topic of waste management.

In the Q&A contest each team chose three participants to take the test and answer the questions on the PPE and CPE topics and use of fire extinguishers in different situations. This activity promoted the integration between the different professional categories to answer the questions.

At the end of the scavenger hunts, the teams played Chinese Whispers to reinforce the importance of effective communication in healthcare services and the role of each professional in the communication stages, with scores being attributed to the teams that correctly reported the sentence presented by the Management Group.

Challenge 8 - Collection of valid tax receipts for the construction of the institution's support center and the collection of food for the association of volunteers.

The teams received a ballot box, according to their color, to deposit the tax receipts. The ballot boxes were located in the institution's hall. For each valid tax receipt the team scored one point.

3,436 valid tax receipts were collected to be used in favor of the construction of the hospital's support center. According to revenue data compared to the month prior to the Olympiad, there was a significant increase of 587% in revenue.

The food collection for the hospital association of volunteers aimed to promote social action among the participants of the event, with mobilization to collect as much food as possible, whatever the unit of measure, (kilo, liter or unit), with a total of 1,100 food items.



Source: Hospital Scientific Documentation department, 2018.

Figure 2. Black light dynamics to assess correct hand hygiene. Paraná, Brazil, 2018.



Challenge 9 - Talent show

On the last day of the event, the proposed challenge aimed to inspire the creativity of the teams, which were free to choose an activity corresponding to the topic of quality and safety. The teams presented to the audience and the judging committee activities of dance, parody and simulation of hospital care, addressing the topic of quality and safety. On this day, the event was attended by the directors of the institution and the internal community, with a total attendance of 120 participants.

The Judging Committee took into account the creativity of the teams and gave the highest score for the most impactful/relevant activity on quality and safety. The crowd that most cheered for their team during the talent show also added points to the corresponding team.

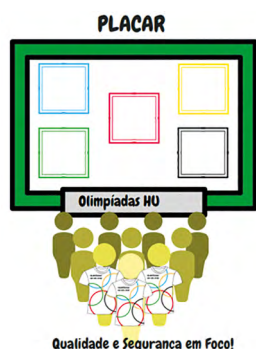
The institution's HR division issued participation certificates to all members who participated in the proposed challenges and attended the lectures according to the criteria established by the organizers.

Concomitant to the activities, the Judging Committee, which is composed of workers, met to assess the challenges and score points, published weekly, on the scoreboard in the hospital's entrance hall (Figure 3).

The closing ceremony took place after the talent show. The winning team was awarded lunch at a famous restaurant in the city of Londrina. The first, second and third places were certified and awarded medals (gold, silver and bronze).

We could verify the effective participation of 325 people, among participants of the five teams, guests for lectures and closing ceremony, in addition to donors of blood and food.

Healthcare professionals (nurses, nursing technicians and physical therapists) and administrative technicians of the institution accounted for most of the participants, but there were also undergraduate and graduate students. At the end of the event, evaluation questionnaires were distributed to the participants:



Source: Art taken from the archives of the Nursing Teaching and Research Division, 2018.

Figure 3. Scoreboard art for scoring points during the Olympiad event. Paraná, Brazil, 2018.

90% of the participants rated the event as excellent and good, as verified by the event organizers.

DISCUSSION

Importantly, the institution that was the setting of this research actively participates in the Sentinel Network of Anvisa and conducts activities of reporting and monitoring of adverse events and technical complaints of products under health surveillance^{10,11}. Since it is a reference institution, the use of active methodologies like the Olympiad may inspire other healthcare institutions to use this method in training their employees.

According to the literature, it is necessary to provide continuing education and training for employees considering the current situation of healthcare institutions and the emergence of new public policies and the use of new technologies in the workplace. This can prepare skilled workers who are able to make more assertive decisions and be ready to deal with the reality of today's healthcare settings¹².

It was possible to observe the need to invest in active methodologies that adapt to the new educational scenario and consider the training of professionals in their expanded concept to act as promoters of positive change. These strategies are linked to educational concepts that encourage the critical-reflexive process as part of meaningful learning and can be generalized in different educational contexts¹³.

Therefore, the discussion and experience of innovative teaching methodologies can become important strategies for the instrumentalization of professionals working in healthcare institutions, in order to prepare them for the complexity of these settings¹³.

Therefore, to hold the Olympiad we adopted the concept of gamification^{8,9}, which supports the educational strategy with the use of game-like elements. The purpose was to promote interaction, engagement and learning among the various participants regarding quality and safety practices in the organizational context.

Authors endorse that game-based learning has been used with positive results in the areas of management, biostatistics, biology, psychology, among other topics that can be addressed with this method, with a view to greater worker compliance and the assertiveness of this pedagogical strategy^{14,15}. This fact contributed to the choice of the Olympiad to address the topic of quality and safety in the hospital environment.

Gamification has also been used in other settings, like a teaching hospital in the capital of the state of Paraná, which used software as a continuing education tool, targeted at the team of nursing technicians who worked in intensive care. The software was created based on the survey of training needs, especially with regard to the safe management of high-surveillance medicines¹⁶.

Another study in two Brazilian universities, involving professors and students of health courses, used a board game as a tool for



learning about the Unified Health System (SUS) and concluded that the inventive character of the strategy enhances learning¹⁷.

The use of gamification extends to teaching in the medical field, since the methodology intentionally designed and aligned with learning goals has the potential to motivate and engage, thus enhancing meaningful learning. The cited study emphasizes that strategy design must follow strict criteria for using game elements outside the virtual context, so one must consider the profile of the target audience and the goal to be achieved¹⁸.

Another study conducted in the state of Ceará used card games to teach about autoimmune diseases at undergraduate level. The results have shown that the use of the methodology facilitated the learning of the content, in addition to promoting multiple interactions, developing autonomy, creativity and mutual cooperation¹⁹.

The initiative of using these innovative practices can be considered an important tool for educational purposes, which favors significant learning within people's work dynamics¹³. Thus, the Olympiad initiative can work as a reference and inspiration to other institutions that are willing to use active methodologies to train their employees.

Active methodologies used as educational strategies can contribute to raising awareness about the issue, further strengthening initiatives such as these, contributing to the reflection of the individual on the importance of the quality of care in their work environment, to strengthen and consolidate the good practices of patient safety¹¹.

This teaching model is based on the development of the subject, who learns through collaborative learning and is inserted in simulated and real cases, leading to the real perception of the problem, collectively and in pairs. Thus, it may favor further clarification on the subject of patient safety in the workplace and spread the safety culture⁶.

The dissemination of patient safety culture is considered an important cornerstone in healthcare services. It enables frequent assessment of the quality of care and promotes the

adoption of safe practices and the reduction of incidents. Thus, the purpose of the Olympiad was to reflect on the safety culture in the institution under study².

In addition to the goal of raising employees' awareness about the importance of quality and safety, the event promoted emerging social actions in our current scenario. Healthcare professionals and academics are also responsible for promoting these actions in a creative, thought-provoking and innovative way in the community, with the purpose of understanding, building knowledge and transforming reality²⁰.

In view of SUS and PNSP guidelines, patient safety practices are built collectively and consolidated through dialogue between workers, academia and the population, who become more empowered to play a leading role in safe care²⁰.

CONCLUSIONS

The use of games and dynamics as innovative educational practices supported the promotion and interaction among participants related to good quality and safety in the institutional context, as well as in the promotion of social actions. The dissemination of the Olympiad strategy can contribute to its generalization in other contexts and applied to other topics.

We believe that this event, with investment in low-cost and high-impact actions, improved the internal policy of quality and safety that has been enforced in the institution in recent years. It is well known that a safety culture is strengthened by the involvement of all stakeholders and the board, regardless of their role, thus favoring the quality of healthcare provided to individuals and families.

A significant share of the participants rated the event as excellent or good. Some of its results will include the future application of the safety culture questionnaire to the internal community, with a view to contributing to other improvements, actions and behaviors for better safety assessment in the institution and preservation of its staff's health.

REFERENCES

1. Reis CT, Martins M, Laguardia J. A segurança do paciente como dimensão da qualidade do cuidado de saúde: um olhar sobre a literatura. *Cienc Saude Coletiva*. 2013;18(7):2029-36. <https://doi.org/10.1590/S1413-81232013000700018>
2. Andrade LEL, Lopes JM, Souza Filho MCM, Vieira Junior RF, Farias LPC, Santos CCM et al. Cultura de segurança do paciente em três hospitais brasileiros com diferentes tipos de gestão. *Cienc Saude Coletiva*. 2018;23(1):161-72. <https://doi.org/10.1590/1413-81232018231.24392015>
3. Organização Mundial da Saúde - OMS. Segundo desafio global para a segurança do paciente: manual: cirurgias seguras salvam vidas (orientações para cirurgia segura da OMS). Belo Horizonte: Ministério da Saúde; 2009.
4. Ministério da Saúde (BR). Portaria Nº 529, de 1 de abril de 2013. Institui o programa nacional de segurança do paciente (PNSP). *Diario Oficial União*. 2 abr 2013.
5. Garanhani ML, Vannuchi MTO, Pinto AC, Simões TR, Guariente MHDM. Currículo integrado de enfermagem no Brasil: uma experiência de 13 anos. *Educ Criat*. 2013;4(12B):66-74. <https://doi.org/10.4236/ce.2013.412A2010>
6. Guimarães JCF, Severo EA, Serafin VF, Capitaniao RPR. Percepções do uso de sistemas inteligentes de acesso à informação em atividades de aprendizagem ativa em nível universitário entre professores de disciplinas biomédicas. *Int J Med Informar*. 2017;112:21-33.
7. Freire P. Pedagogia da autonomia: saberes necessários à prática educativa. 37a ed. São Paulo: Paz e Terra; 2011.



8. Akcaoglu M, Koehler MJ. Resultados cognitivos do programa pós-escola game-design and learning (GDL). *Comput Educ.* 2014;75:72-81. <https://doi.org/10.1016/j.compedu.2014.02.003>
9. Qian M, Clark KR. Game-based learning and 21st century skills: a review of recent research. *Comput Human Behav.* 2016;63:50-8. <https://doi.org/10.1016/j.chb.2016.05.023>
10. Agência Nacional de Vigilância Sanitária - Anvisa. Experiências da rede sentinela para a vigilância sanitária: uma referência para o programa nacional de segurança do paciente. Brasília: Agência Nacional de Vigilância Sanitária; 2014[acesso 9 jul 2019]. Disponível em: <http://docplayer.com.br/7919411-Experiencias-da-rede-sentinela-para-a-vigilancia-sanitaria.html>
11. Macedo RS, Bohomol E. Análise da estrutura organizacional do núcleo de segurança do paciente dos hospitais da rede sentinela. *Rev Gaucha Enferm.* 2019;40(esp):1-10. <https://doi.org/10.1590/1983-1447.2019.20180264>
12. Silva AN, Santos AMG, Cortez EA, Cordeiro BC. Limites e possibilidades do ensino à distância (EaD) na educação permanente em saúde: revisão integrativa. *Cienc Saude Coletiva.* 2015;20(4):1099-107. <https://doi.org/10.1590/1413-81232015204.17832013>
13. Macedo KDS, Acosta BS, Silva EB, Souza NL, Beck CLC, Silva KKD. Metodologias ativas de aprendizagem: caminhos possíveis para inovação no ensino em saúde. *Esc Anna Nery.* 2018;22(3):1-9. <https://doi.org/10.1590/2177-9465-ean-2017-0435>
14. Reyhav I, Wu D. Exploring mobile tablet training for road safety: a uses and gratifications perspective. *Comput Educ.* 2014;7:43-55. <https://doi.org/10.1016/j.compedu.2013.09.005>
15. Cruz JA, Wiemes L. Incentivo à melhoria de práticas pedagógicas com a utilização do método PBL. *Rev Conhec Inter.* 2014;8(2):87-101.
16. Cruz JR, Gonçalves LS, Abreu APMA. Metodologia ágil scrum: uso pelo enfermeiro em jogo educativo sobre manejo seguro de medicamentos. *Rev Gaucha Enferm.* 2019;40(esp):1-5. <https://doi.org/10.1590/1983-1447.2019.20180302>
17. Pires MRGM, Guilhem D, Gottens LBD. Jogo (in)dica-SUS: estratégia lúdica na aprendizagem sobre o sistema único de saúde. *Texto Contexto - Enferm.* 2013;22(2):379-88. <https://doi.org/10.1590/S0104-07072013000200014>
18. Rutledge C, Walsh C, Swinger N, Auerbach M, Castro D, Dewan M et al. Gamification in action: theoretical and practical considerations for medical educators. *Acad Med.* 2018;93(7):1014-20. <https://doi.org/10.1097/acm.0000000000002183>
19. Braga CJM, Pantoja LDM, Bachur TPR, Aragão GF. Jogo de cartas como estratégia para o ensino de doenças autoimunes na graduação médica. *Rev Eletron Comun Inf Inov Saúde.* 2019;13(3):594-607. <http://dx.doi.org/10.29397/reciis.v13i3.1483>
20. França FCV, Melo MC, Monteiro SNC, Guilhem D. O processo de ensino e aprendizagem de profissionais de saúde: a metodologia da problematização por meio do arco de maguerez. Brasília: Teixeira; 2016.

Conflict of Interest

Authors have no potential conflict of interest to declare, related to this study's political or financial peers and institutions.



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