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First Aid Game: Teaching and Assessing First Aid through an Analog Educational Game in School Physical Education within PIBID

First Aid Game: uma intervenção de ensino e avaliação de primeiros socorros com jogo educacional analógico na Educação Física Escolar no contexto do PIBID

First Aid Game: una intervención para la enseñanza y evaluación de primeros auxilios mediante un juego educativo analógico en la Educación Física Escolar en el contexto del PIBID

João do Carmo de Vasconcelos Filho- UECE
Antonio Igor da Silva Teodozio – SME- Fortaleza
Jose Messias Vieira Marques Filho– SME- Fortaleza
Vilanir Lima Dos Santos– SME- Fortaleza
Vanessa da Silva Lima - UECE

Abstract: The incorporation of active learning methodologies into School Physical Education has expanded the possibilities for addressing health-related content, promoting more participatory and contextualized pedagogical practices. In this context, gamification has emerged as a strategy capable of enhancing student engagement and improving teaching and learning processes. This study aimed to analyze the contributions of an analog educational game to the teaching and assessment of first aid learning within the scope of the Institutional Scholarship Program for Teaching Initiation (PIBID). This qualitative and descriptive experience report involved 60 students from the 8th and 9th grades of a public elementary school in Fortaleza, Ceará, Brazil. The intervention included the training of pre-service teachers, the development of the First Aid Game, its validation, production, and implementation during Physical Education classes. Data were collected through participant observation, field notes, and photographic records. The findings indicated that the game promoted student engagement, interaction, and collaborative learning while enabling the identification of different levels of content appropriation when used as an assessment tool. Among students who had not previously studied first aid, the game also demonstrated potential to stimulate interest, activate prior knowledge, and foster the collective construction of knowledge. The experience highlights the pedagogical potential of analog games as resources that integrate teaching, assessment, and active student participation, while reinforcing the relevance of PIBID as a setting for didactic-methodological innovation and the professional development of pre-service teachers.

Keywords: School Physical Education. Gamification. First Aid. Teacher Education. PIBID.

Resumo: A incorporação de metodologias ativas na Educação Física Escolar tem ampliado as possibilidades de abordagem de conteúdos relacionados à saúde, favorecendo práticas pedagógicas mais participativas e contextualizadas. Nesse cenário, a gamificação destaca-se como estratégia capaz de potencializar o engajamento discente e qualificar os processos de ensino e aprendizagem. O presente estudo teve como objetivo analisar as contribuições de um jogo educacional analógico para o ensino e a avaliação da aprendizagem em primeiros socorros no contexto do Programa Institucional de Bolsa de Iniciação à Docência (PIBID). Trata-se de relato de experiência qualitativo e descritivo, desenvolvido com 60 estudantes dos 8º e 9º anos do Ensino Fundamental de uma escola pública de Fortaleza-CE. A intervenção compreendeu a formação dos licenciandos, o desenvolvimento do jogo First Aid Game, sua validação, produção e aplicação em aulas de Educação Física, sendo os dados registrados mediante observação participante, diários de campo e registros fotográficos. Os resultados evidenciaram que o recurso favoreceu o engajamento, a interação e a aprendizagem colaborativa, além de

possibilitar a identificação de diferentes níveis de apropriação dos conteúdos quando utilizado como instrumento avaliativo. Nas turmas que ainda não haviam estudado a temática, o jogo mostrou potencial para despertar o interesse, mobilizar conhecimentos prévios e promover a construção coletiva das respostas. A experiência reforça o potencial pedagógico dos jogos analógicos como recursos capazes de integrar ensino, avaliação e participação estudantil, ao mesmo tempo em que evidencia a relevância do PIBID como espaço de experimentação didático-metodológica e de fortalecimento da formação inicial de professores.

Palavras-chave: Educação Física Escolar. Gamificação. Primeiros socorros. Formação docente. PIBID.

Resumen: La incorporación de metodologías activas en la Educación Física Escolar ha ampliado el abordaje de contenidos de salud y favorecido prácticas más participativas y contextualizadas. En este escenario, la gamificación puede potenciar la participación y mejorar la enseñanza y el aprendizaje. Este estudio analizó las contribuciones de un juego educativo analógico a la enseñanza y evaluación del aprendizaje de primeros auxilios en el Programa Institucional de Becas de Iniciación a la Docencia (PIBID). Es un relato de experiencia cualitativo y descriptivo, desarrollado con 60 estudiantes de 8.º y 9.º curso de una escuela pública de Fortaleza, Ceará, Brasil. La intervención comprendió la formación de los estudiantes de licenciatura, el desarrollo, validación y producción del First Aid Game y su aplicación en clases de Educación Física; los datos se registraron mediante observación participante, diarios de campo y fotografías. Los resultados mostraron que el recurso favoreció la participación, la interacción y el aprendizaje colaborativo, además de identificar diferentes niveles de apropiación de los contenidos como instrumento de evaluación. En los grupos que aún no habían estudiado el tema, el juego despertó interés, movilizó conocimientos previos y promovió la construcción colectiva de respuestas. La experiencia refuerza el potencial pedagógico de los juegos analógicos para integrar enseñanza, evaluación y participación estudiantil, y evidencia la relevancia del PIBID como espacio de experimentación didáctico-metodológica y fortalecimiento de la formación inicial del profesorado.

Palabras clave: Educación Física Escolar. Gamificación. Primeros auxilios. Formación docente. PIBID.

1. Introduction

School Physical Education plays a fundamental role in health promotion and citizenship education. Among the topics that can be addressed in this curricular component, first aid is particularly relevant because it enables students to understand basic procedures in urgent and emergency situations, helping prevent harm and supporting decision-making in everyday situations. Moreover, because classes involve physical and sports activities, school is a suitable environment for educational actions focused on accident prevention and safety promotion (Pina; Martelli; Delbim, 2022).

Despite the importance of the topic, teaching it remains a challenge for teachers, making it necessary to adopt pedagogical strategies that foster greater student participation and meaningful learning. In this context, active methodologies have gained prominence because

they promote student participation and agency in the knowledge-construction process (Studart, 2019). Among these approaches, gamification and the use of game elements have the potential to increase student engagement, motivation, and learning, making education more dynamic, interactive, and aligned with pedagogical objectives (Coelho et al., 2025).

In this context, analog games are one such methodological possibility, allowing school content to be explored playfully without losing its educational purpose. When associated with first-aid instruction, these resources can support not only content learning but also review and assessment, bringing students closer to problem situations that require interpretation, decision-making, and teamwork. Research has shown that educational interventions on first aid in schools produce significant learning gains and reinforce the importance of including this topic in Basic Education (Grimaldi et al., 2020).

The experience reported in this study was developed within the Institutional Scholarship Program for Teaching Initiation (PIBID), an initiative that plays a fundamental role in initial teacher education by bringing universities and public schools closer together. By placing pre-service teachers in everyday school life from the early years of their degree, the program promotes the connection between theory and practice, experience with real teaching situations, and the development of contextualized pedagogical strategies. In this setting, PIBID provides a space for experimentation, reflection, and teaching innovation, enabling the design and application of instructional resources that respond to school realities and contribute to the didactic transposition of knowledge developed during academic training.

Accordingly, this article reports the experience of teaching a School Physical Education class to groups in the final years of Elementary Education and analyzes the contributions of an analog educational game as a strategy for teaching and assessing first-aid learning within PIBID.

2. Method

This qualitative and descriptive experience report describes a pedagogical intervention conducted during classes taught in June 2026 with 60 students from the 8th and 9th grades at a PIBID partner school located in the Granja Portugal neighborhood of Fortaleza, Ceará. Its purpose was to analyze the difficulty level of the questions and determine whether the game could be used with students who had no prior knowledge of the topic.

For this purpose, the intervention was structured into four fundamental stages:

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1. Teacher education: the PIBID scholarship students were initially trained through an Analog Games workshop. The meetings provided theoretical and practical grounding in gamification concepts, dynamics, mechanics, and playful components in the school context.

2. Game design and conception: development of the original analog game called First Aid Game. The theme was selected based on first-aid content previously taught in theoretical and practical classes. The graphic design of the visual identity, board, manual, and cards was created in Canva, establishing a track-game dynamic with objective-question cards, mime activities, and penalty spaces. The main objective is to reach the end of the track first. To do so, teams roll dice to determine how many spaces they move and answer question or mime cards about the topic in order to advance.

3. Validation and physical production: after the game was created, the resource prototype was assessed and validated by the supervising teacher at the partner school. Four copies were printed by a local print shop. At the same time, the game pieces were made in the partner school's Innovation Laboratory using three-dimensional (3D) printing, with support from the school's Art teacher and the More Science in Schools project. This technology made it possible to produce customized pieces, contributing to the material's visual identity and quality (Figure 1).

Figure 1 – Board, game pieces, and cards produced for the game.



Source: Prepared by the authors.

4. Application of the First Aid Game during the Physical Education class:

a. 9th-grade group: the game was applied after the completion of the first-aid teaching sequence. At this stage, it was used both to review content and to assess learning, making it possible to analyze knowledge retention, students' ability to interpret the situations presented, and the practical application of the concepts studied.

b. 8th-grade groups: the game was applied on an exploratory basis to observe the level of difficulty experienced by students, identify whether prior knowledge was required to participate, analyze its potential as an introductory resource for the topic, and identify possible adaptations for future applications.

For the purposes of recording and analyzing the pedagogical experience, data were collected through observations by the PIBID scholarship students, field-diary notes, and photographic records of class activities. In addition, all student identities were protected and kept confidential in the description of the results, safeguarding the ethical integrity of the intervention.

3. Results and discussion

Overall, the experience of developing and applying the First Aid Game achieved the proposed objectives and produced positive results both in the creation of the material and in its use as a pedagogical resource in School Physical Education. The design process resulted in visually attractive material with its own graphic identity and elements associated with health, a feature intended to arouse students' curiosity and interest even before the activity began.

During the sessions, the visual aspect, competitive logic, and pair/trio dynamics directly influenced students' initial motivation. Even before the rules were presented, several students showed curiosity about the material, asked how it worked, and expressed interest in taking part simply because of the appearance of the board, cards, and other components. This result shows that investment in visual identity was not merely aesthetic, but also constituted a pedagogical element capable of fostering engagement and increasing students' willingness to learn. This finding is consistent with Coelho et al. (2025), who emphasize that game elements promote more engaging and motivating learning experiences and increase students' interest in the educational process.

Another noteworthy aspect concerns the potential of the First Aid Game as a learning-assessment instrument. This reinforces the perspective of Coelho et al. (2025), who state that gamification should not be limited to entertainment, but should be pedagogically planned to meet clear educational objectives, thereby making the game a teaching and learning-assessment

resource. Initially, some questions were believed to have a low level of difficulty and to make the activity too simple for students. The application, however, revealed a different scenario. Although all students participated throughout the activity, their answers showed significant differences in content appropriation, making it possible to identify distinct levels of learning.

In the session conducted with a 9th-grade class, students were organized into three groups. In two of them, the activity proceeded satisfactorily, with high participation, consistent answers, and discussions grounded in the knowledge acquired during first-aid classes. The teams confidently addressed the proposed problem situations, while the mime cards generated moments of intense interaction, creativity, and collaboration among participants, making assessment light and engaging without sacrificing its educational nature.

One group, however, experienced considerably greater difficulties during the activity. Most of its members had shown low participation during theoretical classes, taken few notes, and engaged little in the proposed discussions. Consequently, they had difficulty answering the game's questions and justifying the most appropriate responses to the situations presented. This result reinforces the game's capacity to identify differences in student learning, showing that its use goes beyond a playful function and constitutes a resource capable of assessing retention of the content addressed in class.

Another relevant result was observed during the experimental use of the game with an 8th-grade class. Unlike the 9th-grade groups, these students had not yet participated in the first-aid teaching sequence. The purpose was to analyze the difficulty level of the questions and determine whether the game could be used with students who had no prior knowledge of the topic.

During this session, students found the card questions more difficult and frequently relied on group hypotheses and collective discussion to construct their answers. On several occasions, mistaken interpretations led to relaxed and humorous situations, contributing to a light and participatory learning environment. Although the game lost its assessment function in this context, it retained considerable pedagogical potential by encouraging dialogue, curiosity, and the collective construction of knowledge.

This experience showed that the First Aid Game can perform different functions in the teaching and learning process. When applied after a teaching sequence, it proved effective as a review and learning-assessment instrument, making it possible to identify consolidated knowledge and remaining difficulties. When used before formal instruction, it showed potential to arouse interest in the topic and introduce discussions about first aid. Even without prior knowledge, students showed interest in the situations presented, corroborating Grimaldi et al.

(2020), who describe school as a privileged environment for first-aid education and emphasize the importance of implementing educational strategies aimed at students.

The results therefore indicate that the game goes beyond the idea of a merely recreational resource. Its use fostered active student participation, encouraged interaction among groups, promoted cooperation and problem-solving, and transformed assessment into a more dynamic and meaningful experience. In addition, it demonstrated that pedagogical resources based on playful elements can contribute both to learning and to student engagement, strengthening innovative practices in School Physical Education.

In this sense, the First Aid Game aligns with active methodologies by moving students from the role of recipients to that of protagonists in learning and by promoting participation, argumentation, and decision-making throughout the activity, principles discussed by Studart (2019).

Finally, the experience showed that the First Aid Game has characteristics that allow it to be used at different stages of teaching plans, whether as an introductory strategy, a review activity, or an assessment instrument. Students' positive reception, together with the quality of the material and the interactions observed during play, demonstrates the game's potential for future pedagogical interventions and expands methodological possibilities for first-aid instruction at school.

Although the results demonstrate the pedagogical potential of the First Aid Game, the experience also revealed possibilities for improving the material. These include expanding the bank of questions and challenges and organizing them by levels of complexity. One alternative would be to structure the cards according to a taxonomy of educational objectives, allowing the game to be adapted to different stages of Basic Education. It could thus range from questions focused on recalling and understanding concepts to problem situations requiring analysis, decision-making, and practical application of first-aid knowledge. This adaptation would increase the versatility of the instructional resource, facilitate its use in different school years, and align the challenges with the competencies and skills expected at each level of education.

Final considerations

This experience report highlighted the potential of the First Aid Game as a pedagogical strategy for teaching and assessing first-aid content in School Physical Education. The creation of the game and its application with 8th- and 9th-grade students demonstrated that analog resources can foster engagement, active participation, and interaction, making learning more

dynamic and meaningful. The game also proved effective in assessing retention of knowledge addressed in class, while making it possible to identify different levels of student learning and expand methodological possibilities for teaching the topic.

Within PIBID, the experience contributed significantly to teacher education by providing experience with every stage in the development of an educational resource, from conception to application in the school environment. Creating the First Aid Game required creativity, planning, and pedagogical intentionality, reinforcing the importance of producing innovative instructional materials in School Physical Education. Finally, this experience is expected to encourage other teachers and pre-service teachers to develop educational games for the discipline's different areas of content and to motivate further research into the effectiveness of these resources in different contexts and levels of education.

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