

Educational proposals for preventing elder abuse adults through gamification: action research^a

Propostas educativas para prevenção da violência contra pessoas idosas por meio da gamificação: pesquisa-ação

Propuestas educativas para la prevención del abuso de ancianos mediante la gamificación: investigación-acción

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ABSTRACT

Objective: to develop gamified educational proposals to prevent elder abuse, engaging college students from different fields of knowledge, and to assess their attitudes, perceptions, and knowledge of gamification. **Method:** critical-collaborative action research was conducted in a municipality in the countryside of São Paulo, between December 2022 and December 2023, with health, humanities, and exact students. Forty participants were organized into groups guided by a game design specialist and researchers. Initially, they received training on gamification and elder abuse. Throughout the process, successive assessments and self-assessments were carried out by 22 students who remained until the end of the activities. **Results:** six gamified proposals addressing elder abuse prevention were developed, targeting different age groups and game modalities. Students reported significant changes in their attitudes, as well as an expansion of skills, and knowledge related to gamification. **Conclusions and implications for practice:** the collaborative development of gamified educational proposals proved to be an appropriate strategy to raise awareness about elder abuse prevention in diverse contexts, in addition to providing resources that can be applied by nurses to enhance professional practice.

Keywords: Elder Abuse; Gamification; Health Education; Universities; Violence.

RESUMO

Objetivo: construir propostas educativas gamificadas sobre prevenção da violência contra pessoas idosas, envolvendo universitários de diferentes áreas, e avaliar atitudes, percepções e conhecimentos sobre gamificação. **Método:** pesquisa-ação, crítico-colaborativa, realizada em município do interior paulista, Brasil, entre dezembro de 2022 e dezembro de 2023, com estudantes das áreas da saúde, humanas e exatas. Os 40 participantes foram distribuídos em grupos, orientados por um especialista em game e pesquisadoras. Inicialmente, receberam treinamento sobre gamificação e violência contra pessoas idosas. Ao longo do processo, foram conduzidas avaliações sucessivas e autoavaliações, realizadas por 22 estudantes que permaneceram até o final das atividades. **Resultados:** foram elaboradas seis propostas gamificadas voltadas à prevenção da violência contra pessoas idosas, contemplando diferentes faixas etárias e modalidades de games. Os estudantes identificaram mudanças significativas em atitudes, bem como na ampliação de habilidades e conhecimento sobre gamificação. **Considerações finais e implicações para a prática:** a construção de propostas educativas gamificadas mostrou ser estratégia adequada para sensibilizar sobre a prevenção da violência contra pessoas idosas em distintos contextos, além de oferecer recursos que podem ser incorporados por enfermeiros para potencializar a prática profissional.

Palavras-chave: Abuso de Idosos; Educação em Saúde; Gamificação; Universidades; Violência.

RESUMEN

Objetivo: construir propuestas educativas gamificadas para la prevención del abuso de ancianos, involucrando a universitarios de diferentes áreas del conocimiento, y evaluar sus actitudes, percepciones y conocimientos sobre gamificación. **Método:** investigación acción crítico-colaborativa en un municipio del interior de São Paulo, entre diciembre de 2022 y diciembre de 2023, con estudiantes de las áreas de la salud, humanidades y ciencias exactas. Los 40 participantes fueron organizados en grupos, orientados por un especialista en juegos y de investigadores. Inicialmente, recibieron capacitación sobre gamificación y violencia contra ancianos. A lo largo del proceso, se realizaron evaluaciones sucesivas, y autoevaluaciones con 22 estudiantes que permanecieron hasta el final de las actividades. **Resultados:** se desarrollaron seis propuestas gamificadas dirigidas la prevención del abuso de ancianos, contemplando diferentes grupos etarios y modalidades de juegos. Los estudiantes identificaron cambios significativos en actitudes, así como en el desarrollo de habilidades y conocimientos relacionados con la gamificación. **Consideraciones finales e implicaciones para la práctica:** la construcción de propuestas educativas gamificadas demostró ser una estrategia adecuada para sensibilizar sobre la prevención del abuso de ancianos en distintos contextos, además de ofrecer recursos que pueden ser incorporados por enfermeros para potenciar la práctica profesional.

Palabras clave: Abuso de Ancianos; Educación en Salud; Gamificación; Universidades; Violencia.

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INTRODUCTION

The world's population is experiencing a continuous aging process. In Brazil, the 2022 demographic census indicated that 15.8% of the population was composed of older adults. By 2060, it is estimated that more than a quarter of the population will be over 60 years old.^{1,2}

During aging, organic, functional, and psychological changes occur. Consequently, there is a decrease in functionality, which increases the possibility of health problems and illnesses, as well as dependence for activities of daily living. Thus, older adults are exposed to circumstances that can worsen their living and health conditions, such as violence.³

Elder abuse is characterized as any action or omission that occurs within a relationship of trust and results in harm or suffering. This violence can manifest in various forms, such as neglect, abandonment, financial abuse, psychological, physical and sexual abuse, and self-neglect.⁴ Frequently, these episodes occur in home environments, with children, grandchildren, and neighbors being the main perpetrators. It is, therefore, a complex, underreported, and underdiagnosed phenomenon, which contributes to social invisibility, hindering its confrontation and recognition as a violation of human rights.⁵⁻⁷

Although healthcare professionals play a central role due to their proximity to this vulnerable population, many report feeling inadequately prepared to deal with the complexity of the phenomenon. Furthermore, meeting this challenge requires integrated efforts, ranging from improvements in professional training to community-based awareness initiatives that foster a culture of respect, care, and protection for older adults, involving both the health field and the fields of human and exact sciences.⁸

A study with dental students demonstrated that online training improved students' actual knowledge of how to interact appropriately with older victims of abuse.⁹ Another program, aimed at nursing students, addressed the rights of older adults, types of abuse, legislation, and protection agencies, promoting advances in knowledge, attitudes, and willingness to report situations of violence.¹⁰

Thus, it is observed that offering educational interventions on elder abuse during undergraduate studies favors the identification of violence. However, it is also observed that curricula addressing the aging process have not provided sufficient support for interventions in the face of violence.^{9,10}

It is therefore considered that young college students in the fields of health, humanities, and exact sciences play a strategic role in shaping a society that is more aware and engaged with relevant social issues, such as respect for and protection of older adults, especially when they receive adequate training. To contribute to this approach, gamified educational interventions can be used.

Gamification, which applies elements and techniques of game design in contexts such as education, health, and corporate environments, has emerged as a promising strategy for engaging, motivating, and transforming behaviors. Gamification is being

adopted to inspire teams, encourage innovation, improve learning processes, and generate significant social impact.¹¹

Thus, this study began with the question: how do young college students, encouraged to produce educational games aimed at preventing elder abuse through gamified educational intervention, develop and implement proposals to address this problem? In this context, the aim was to construct gamified educational proposals on elder abuse prevention, involving college students from different fields, and to assess their attitudes, perceptions, and knowledge of gamification.

METHOD

This is action research (AR) of the critical-collaborative type, developed with the participation of college students from different areas of knowledge, with a view to developing gamified educational proposals aimed at preventing elder abuse.¹² To maintain methodological rigor, the Standards for Reporting Qualitative Research protocol was used as a support tool for developing the study.

AR seeks to resolve practical problems through action. It is an experimental strategy that, by emphasizing the understanding of facts, establishes itself as an intervention project to solve a problem. Through AR, it is possible to contribute to better problem management, identify solutions, contribute to transforming the situation, develop collective awareness, and produce knowledge. Thus, the researcher must follow the process with an active stance towards the problem, in order to assess the actions developed.¹²

In the critical-collaborative AR approach, participants become researchers, starting from problem-solving, and seek interventionist actions. The action involves active and collaborative participation among participants, in addition to having a pedagogical character, promoting critical thinking. In this way, those involved in the process become able to solve problems coherently and interactively, with a view to transforming reality.^{13,14}

The study was conducted at a higher education institution (HEI) located in a municipality in the Midwest region of the state of São Paulo, Brazil, with an estimated population of 237,627 inhabitants.¹⁵ This HEI offers two undergraduate courses: medicine and nursing.

For this study, students were included from both the institution responsible for conducting the research and from three other HEIs in the municipality, totaling four institutions (two public and two private), with the aim of including health, exact sciences, and humanities students of both sexes/genders.

Participant selection was non-random. Initially, contact was established with the course coordinators of the selected institutions, who, in turn, invited students interested in participating in the activities and passed on their contact information to the research team.

Students regularly enrolled in one of the four institutions, who had completed at least one year of their course and were 18 years of age or older, were included. Students without access to digital devices or the internet were excluded.

The activities carried out from December 2022 to December 2023 were conducted by two researchers specializing in elder abuse and a professional in the field of games. Participants came from medicine, nursing, law, occupational therapy, physiotherapy, civil engineering, psychology, and pedagogy courses. The initial sample consisted of 40 students; a number defined beforehand according to the feasibility of carrying out the activity. However, throughout the process, some students dropped out of the activities, with only 22 completing the project.

The development of gamified educational proposals was guided by active learning methods, specifically problem-based learning, implemented through a dialectical process of action-reflection-action. This process starts with complex real-world problems and, after theoretical grounding, returns to reality with transformative proposals.¹⁶

The activities for developing educational proposals were carried out in four in-person meetings of eight hours each, interspersed with four online meetings of four hours each. The in-person meetings took place on Saturdays in the classrooms and computer lab of the proposing institution. Online meetings were held in the evening, with the aim of including as many participants as possible without interfering with academic activities. Initially, fundamental gamification concepts were addressed, such as motivation in games, essential elements (points, medals, and rankings), the pyramid of elements, game designers' role, player typology, design rules, fundamentals of behaviorism applied to gamification, intrinsic and extrinsic motivation, practical frameworks (the 6Ds of design), and analysis of limitations and risks. Furthermore, contemporary topics were discussed, such as population aging, functional capacity, rights, and types of elder abuse.

Subsequently, students were divided into six groups of six to seven members to develop gamified educational proposals. Participants then applied this knowledge to create gamified proposals focused on preventing elder abuse. As they were developed, they were presented to the larger group, discussed, and refined with the support of other students, researchers, and a games expert. Additional meetings were also held to address specific questions about the preparation of the proposals. Although some students dropped out throughout the process, there was no change in the number of groups and proposals during the course of the meeting.

For self-assessment of student performance after AR completion, an instrument was developed with six questions about perception and attitudes towards elder abuse and knowledge of gamification before and after training. A five-point Likert scale was used for the responses, with the following options: very good; good; regular; poor; and very poor.

To process the data obtained from the self-assessment instrument application on knowledge, perception, attitudes, and skills in gamification before and after the course, the Wilcoxon¹⁷ test was used to compare the means.

The study was approved by the Research Ethics Committee of the proposing institution (Certificate of Presentation for Ethical

Consideration 53517421.5.0000.5413 and Opinion 7,209,355). Participants signed the Informed Consent Form.

RESULTS

Concerning the 22 participants, 17 self-identified as female and five as male, with an average age of 23 years. Gamification training included general concepts, case studies, a focus on the motivation provided by games, fundamental elements of games, types of players and their respective behaviors, as well as design principles, intrinsic and extrinsic motivation, and the 6Ds of practical gamification design. Gamification's limitations and potential risks were also discussed, culminating in the development of six gamified proposals focused on elder abuse.

During the process of developing the gamified proposals, there was constant integration of content on elder abuse based on literature reviews and data presentations, including local studies conducted by the research team. Furthermore, participants were encouraged to seek knowledge from various sources, such as articles, books, and other educational materials. A synthesis chart of the developed proposals is presented below (Chart 1).

After completing the gamified project development activities, students assessed how their experience in projects contributed to their perception and attitudes towards elder abuse, as well as to their knowledge of gamification developed throughout the process (Table 1).

Table 1 shows that, when comparing self-assessments before and after the intervention, there was a statistically significant difference, indicating that participants considered that they improved their knowledge of gamification, attitudes and perceptions regarding elder abuse, as well as optimized their knowledge of gamification.

DISCUSSION

Research, during the development of actions aimed at improving healthcare, presents itself as a favorable process for building reliable interventions, since it shows the possibilities of transforming knowledge into tools that can be applied in professional practice, with clear evidence of effectiveness. This AR experience highlights the importance of working with active learning methods, due to their ability to encourage students to develop autonomy, integrating different areas of knowledge.

From this perspective, students' exercise of creativity stands out, as they managed to develop games with different modalities and approaches, in addition to targeting them at different audiences, ranging from 5-year-old children to older adults. Although creativity can be interpreted under different conceptions, from the point of view of engagement, it is linked to individual and/or collective commitment, which involves a positive and rewarding feeling related to the work, generating dedication and efficiency in the search for new ideas.²¹

The educational games developed utilized the principles of gamification, which has also been considered an active form of learning because it is student-centered, engaging, and dynamic.

Chart 1. Synthesis of proposals developed in the action research. Marília, São Paulo, Brazil, 2022/2023.

Names	Target audience	General description of the proposal	Validation and results
Super Netos (Super Grandchildren)	5-year-old children	This app features a playful game with 25 questions about psychological violence and intergenerational relationships. For each question, an interactive board was developed in Microsoft PowerPoint, following a quick game format with age-appropriate illustrations. The boards are presented to the children, who indicate whether the statement is correct or not. Correct answers earn them points.	The boards were validated by seven experts regarding their appearance, relevance, and content, thus establishing themselves as a highly relevant tool for raising awareness among children about the topic.
Mood 60+	Older adults	Digital bingo with 23 reflective phrases related to respect and appreciation for older adults. Each phrase is assigned a number. Players received an individual conventional bingo card, composed of nine randomly combined numbers. Each phrase prompts discussion and reflection among older adults in the group, during which violence prevention is reinforced by moderators.	Validation with the target audience, with adjustments made for greater dynamism and engagement. In addition, the game is being used in different settings. ¹⁸
Descubra o Aggressor (Find the Aggressor)	Adolescents, adults, and healthcare professionals	A board game in the style of "Clue", where players assign roles such as judge, aggressor, neighbor, healthcare professional, police officer, and others, with each player performing their assigned role. At the end of the game, activity moderators, together with participants, raise points about the topics to be discussed and explored.	This game was implemented in community activities and was considered interactive, fun, and capable of sparking important reflections.
Saber Cuidar (Knowing How to Care)	Family caregivers for older adults	The app prototype was built using the Canva platform. The game focuses on caregiver support, emphasizing the importance of well-being, with space for monitoring emotional and health conditions. Additionally, it includes sections for data on older adults' daily living activities, as well as videos, illustrations, and descriptions about key aspects of caring for them.	The material was submitted for validation by 11 judges, including both healthcare professionals with experience in geriatrics and gerontology, and the target population. After correcting the identified inadequacies, the game was considered validated.
Conhecer para Respeitar (Knowing to Respect)	Health sciences students	A three-minute educational video and a ten-question quiz on elder abuse prevention were developed. As players answer all the questions correctly, the system issues a "Older adult-friendly" certificate.	Validation was performed by 13 judges selected from the target population.
USF Amiga da Pessoa Idosa (Older Adult-Friendly FHU)	Community older adults	An online form was developed using the Google Forms platform, containing the Multidimensional Assessment of the Elderly Person in Primary Care ¹⁹ and the Hwalek-Sengstock Elder Abuse Screening Test. ²⁰ Training was provided to students in nursing and medical courses, as well as professionals from the primary health care network.	Initially, 118 older adults were assessed, revealing a large proportion of pre-frail and frail individuals, as well as an association between frailty and risk of violence. Through a partnership with the Municipal Health Department, specialized care actions were established for older adults at higher risk.

Table 1. Distribution of participants according to self-assessment of perception and attitudes towards elder abuse and knowledge of gamification before and after the intervention (n=22). Marilia, SP, Brazil, 2022/2023.

Variables	Categories	Before		After		p-value
		N	%	N	%	
Attitude	Very poor	0	0.0	0	0.0	<0.001*
	Poor	1	4.5	0	0.0	
	Regular	4	18.2	0	0.0	
	Good	12	54.5	5	22.7	
Perception	Very good	5	22.7	17	77.3	<0.001*
	Very poor	0	0.0	0	0.0	
	Poor	3	13.6	0	0.0	
	Regular	11	50.0	0	0.0	
Knowledge of gamification	Good	6	27.3	6	27.3	<0.001*
	Very good	2	9.1	16	72.7	
	Total	22	100.0	0	0.0	
	Very poor	3	13.6	0	0.0	
	Poor	8	36.4	0	0.0	<0.001*
	Regular	7	31.8	1	4.5	
	Good	3	13.6	9	40.9	
	Very good	1	4.5	12	54.5	

Note: *Indicates a significant difference in the proportion distribution between the pre- and post-test times by the Wilcoxon test for a p-value ≤ 0.050.

However, the creation process presents some challenges, such as the need to include the playful aspect and address the desired knowledge in a systematic manner. Therefore, an interdisciplinary team is needed, capable of addressing both the subject matter and the technology used, in order to ensure effective interaction between the content and technological resources, focusing on the target population.^{22,23}

In education, gamification has stood out for prioritizing learning through interactive and engaging components that consider interaction with the environment, technologies, and people, resulting in greater engagement and motivation in pedagogical activities.^{22,23} In this study, when actions were proposed to prevent the significant public health problem that elder abuse represents, students felt challenged and motivated.

Thus, it can be inferred that students' experiences in developing the activities are close to the principles of constructivist theory, in which knowledge is built from intrinsic and extrinsic motivations. From this perspective, the game becomes attractive because it is based on human behavior characteristics, such as achievement, competition, bonuses, and rewards.²⁴

This AR, in addition to the learning process, allowed the development of six gamified educational proposals, with different structures and target populations. The "Super Netos" (Super Grandchildren) project, aimed at 5-year-old children, focuses on psychological violence, which is characterized by verbal or gestural actions that aim to restrict social interaction, isolate, humiliate, or

generate fear in older adults. Since it is often part of older adults' daily lives, it becomes normalized in this context.²⁵ This proposal stemmed from the belief that early education, especially when it encourages empathy and respect, has proven to be a promising approach to fostering positive attitudes towards older adults.²⁶

The "Conhecer para Respeitar" (Knowing to Respect) proposal, aimed at health students, presents itself as a possibility for dissemination on social networks and in repositories, and has the potential to motivate and reinforce the importance of behavioral change regarding the rights of older adults and violence prevention, since the game is based on conditions that occur in the daily routine of healthcare services. In this regard, it has been considered that healthcare professionals are fundamental in identifying the problem and reporting elder abuse, as they work closely with patients.²⁷ Despite this, professionals often do not feel prepared to deal with this phenomenon.²⁸

The educational bingo-type game "Mood 60+",¹⁸ in addition to being developed, was validated and applied in different settings, targeting older adults themselves. This is an easy, accessible, and fun game that, at the same time, has the capacity to encourage important reflections on prevention, as well as reveal situations experienced by them. From this perspective, gamification provides a playful experience, enabling the recognition of real-life situations through exchanges and interactions among participants, promoting identification, reflection, dialogue, and application of knowledge to new experiences.¹¹ It is emphasized that the game of bingo is

quite popular among them for recreational purposes, which easily led to its incorporation as an educational technology.

The “*Descubra o Agressor*” (Find the Aggressor) game also stood out as an innovative and effective tool in preventive education, promoting collective awareness and encouraging social responsibility in the protection of older adults.¹¹

The “*Saber Cuidar*” (Knowing How to Care) proposal, which aimed to develop an app that would gather information for the care of older adults, as well as alert people to conditions that cause burnout and stress for caregivers, acknowledges that the cause of physical and emotional burnout in informal caregivers is a lack of mastery of techniques and knowledge related to the act of caregiving. Therefore, using the application, as a source of knowledge, aims to promote changes in habits, by assisting in self-care of caregivers, as well as in the knowledge dimension, to deal more safely with older adults who need care.²⁹

The “*USF Amiga da Pessoa Idosa*” (Older Adult-Friendly FHU) proposal was developed considering the repercussions of violence and the importance of assessing the risk of violence and the vulnerability of older adults in Primary Health Care, since this setting is conducive to proposing appropriate preventive measures, although maintaining few elements of gamification.^{28,30}

Furthermore, it was discussed that participants' self-assessment indicated improvements in attitude, perception regarding elder abuse, and knowledge of gamification, suggesting that the intervention had a positive effect. This perspective aligns with the observation that learning occurs through a web of relationships processed from information perceived by the brain, derived from sensations, perceptions, emotions, words, sounds, gestures, and body postures, when constant exchanges occur between memory and associative connections in a circular learning process.³¹

The importance of the constructivist teaching model is highlighted because, in addition to assessment, which points to improvements in skill, attitude, and knowledge, participants also presented a consistent and effective product on the topic at hand.³² It is emphasized that, in the present AR, by entering the universe with the possibility of observing, assessing, reflecting, and planning in a process that involves multiple actors and possibilities for creation, the potential was found as a research modality that also proposes intervention and greater visibility of the problem.

FINAL CONSIDERATIONS AND IMPLICATIONS FOR PRACTICE

Given the objective of developing gamified educational proposals aimed at preventing elder abuse, with the participation of college students from different fields of knowledge, it can be stated that, through a process of intense involvement and motivation, important proposals were developed that can contribute as tools for advancing professional practice. Furthermore, the process of constructing games proved effective in developing students' skills, attitudes, and knowledge, by allowing them to connect gamification principles with the needs of older adults facing violence, with a view to prevention.

In this context, the use of active learning methods in transforming reality and achieving meaningful learning is reinforced. By promoting interactivity and interdisciplinarity in group work, students had the opportunity to engage with the concepts and development of games, which has been emphasized to facilitate learning, especially of topics that are difficult to approach, such as elder abuse.

Furthermore, it was possible to develop six gamified educational proposals, with different structures and target populations, which were validated and are being applied locally and disseminated so that professionals from other locations can use them in their respective contexts, thus highlighting their contribution to health and nursing practices.

Methodological limitations include the use of a small, convenience sample, which restricts the generalizability of the findings. Furthermore, AR's participatory nature may have introduced subjective biases into the interpretations. Nevertheless, the results obtained demonstrate the relevance and applicability of the educational proposals developed.

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DATA AVAILABILITY RESEARCH

We declare that the research database is available in the Figshare repository at the following web addresses: <https://figshare.com/s/18960a5ced87212d0b1e>; <https://figshare.com/s/91666959094e7e9a2ac5>; <https://figshare.com/s/62eda06d7dd1f9d8b545>; <https://figshare.com/s/7808f25864d252fd67a6>

CONFLICT OF INTEREST

No conflicts of interest.

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