IMPLEMENTATION OF EDUCATIONAL TECHNOLOGIES ON EMERGENCIES AND PUBLIC CALAMITIES FOR STUDENTS IN RISK TERRITORY

IMPLANTAÇÃO DE TECNOLOGIAS EDUCATIVAS SOBRE EMERGÊNCIAS E CALAMIDADES PÚBLICAS PARA DISCENTES EM TERRITÓRIO DE RISCO

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ABSTRACT
Objective: To report the use of educational technologies aimed at health education on the issue of Emergencies and Public Disasters in a region of danger. Methodology: The research is a descriptive experience report on the construction and implementation of educational technologies, in 05 stages with 04 classes of elementary, middle and higher education in the lake region of the Tucuruí Hydroelectric Plant. Results: About 122 students aged 11 to 23 years old were trained, through the use of urban models and realistic simulations. It was found that the adoption of playful technologies is one of the facilitating strategies that places the student at the center of the teaching-learning process, watching the teacher-student relationship and the act of educating. Conclusion: Therefore, it is necessary to build strategies to disseminate this topic in an easy, agile and comprehensive way to communities living in risky areas, and health education is recommended that contributes to the effectiveness of such proposal in favor of life.
Keywords: Educational Technology; Health Education; Emergency Care; Natural Disasters.

RESUMO
Objetivo: Relatar o uso de tecnologias educativas direcionadas à educação em saúde sobre a problemática de Emergências e Calamidades Públicas em uma região de perigo. Metodologia: A pesquisa trata-se de um relato de experiência de cunho descritivo sobre a construção e implementação de tecnologias educativas, em 05 etapas com 04 turmas do ensino fundamental, médio e superior da região do lago da Usina Hidrelétrica de Tucuruí. Resultados: Foram capacitados cerca de 122 alunos com faixa etária de 11 a 23 anos de idade, através da utilização de maquetes urbanísticas e simulações realísticas. Averiguou-se que a adoção das tecnologias lúdicas é uma das estratégias facilitadora que coloca o discente no centro do processo de ensino-aprendizagem, assistindo à relação professor-aluno e o ato de educar. Conclusão: Portanto, faz-se necessária a construção de estratégias para divulgação desse tema de modo fácil, ágil e abrangente as comunidades que vivem em território de risco, sendo recomendada uma educação em saúde que contribua na efetividade de tal proposta em prol da qualidade de vida.
Palavras-Chave: Tecnologia Educacional; Educação em Saúde; Atendimento de Emergência; Desastres Naturais.

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INTRODUCTION

The Civil Defense (DF) defines emergency and public calamity as the legal recognition, by the affected municipality, of an abnormal situation caused by disasters, which result in bearable damage for the community and contribute to the beginning of danger to the lives of the inhabitants. In view of this, it is important to emphasize the effective performance of DC bodies, Health, Public Safety, Planning and Construction Departments, and also of society itself, which must be prepared for disaster situations. In Brazil, to support the three spheres of government, there is the National Force of the Unified Health System (FN-SUS), created through Presidential Decree No. 7.616, of November 17, 2011 and regulated in the Unified Health System (SUS), through Ministerial Ordinance GM/MS No. 2.952, of December 14, 2011, which provides for the Declaration of Emergency in Public Health of National Importance – ESPIN, and urgent demands for measures of prevention, risk containment, damage and harm to health [1].

From this perspective, natural storms such as terrorism, landslides, tsunamis and other threats have become frequent in recent decades. Thus, it is essential to build defined and clarified disaster plans, which can cover the control and maintenance of vital sectors of the community, such as hospitals and health services, as well as define the local capacity to provide that there is an adhesion of the population. In the meantime, the occurrences of the aforementioned events in public health significantly contribute to morbidity and mortality in the world, requiring governments to improve their preparedness and response capacity, as social, economic and environmental vulnerability increases the risk of impact on human health [2].

From this, it is considered necessary to build strategies that will implement the disclosure of these situations in an easy, agile and comprehensive way, so that the communities may have knowledge about the risk factors that culminate in disasters. Thus, health professionals, when applying health education, use health technologies, which, according to the World Health Organization (WHO), refers to the application of all knowledge in forms of devices and systems that contribute to the effectiveness and applicability of procedures for the quality of life and well-being of individuals. Furthermore, it is understood that these tools are essential for the promotion of scientific and technological advances, since these equipment are essential in the provision of services, in addition to facilitating the communication process and consequently innovating the educational sphere, through the adoption of educational technologies associated with health education [3].

In this sense, the use of health technologies in the educational sphere becomes an important factor for the promotion of knowledge, as they constitute complementary instruments to the study method, which promote the facilitation of understanding on the most diverse issues that come to be addressed. For this reason, health professionals, in view of the change in the global scenario, which is increasingly innovated and modified, use health education as a reinterpretation apparatus to formulate and improve methodological alternatives capable of supplying and informing the most different social audiences, according to their needs and particularities [4].

In this bias, health education seeks a facilitating teaching-learning process, therefore, the application of educational technologies that include simple products and materials, constitute important instruments for the construction of interpersonal relationships, in addition to providing a basis and environment for discussion of conceptual variables that contemplate ideas and positions of the pluralities of each public in question. Therefore, this factor, in addition to raising questions, sharpens the individual's critical sense, raising awareness on the subject and interest in seeking information that instigate a more critical view of other issues and questions [5].

It is considered the inclusion of this teaching in the curriculum of the Municipal Network, since Basic Life Support, from Law No. 13. 722, of October 4, 2018, which makes training in basic notions of first aid of teachers and employees of public and private basic education establishments and children's recreation establishments [5].

From this angle and based on the references mentioned, it is expected that with the reading of this article, the objective of training and instigating the critical-reflective sense of health professionals is contemplated, in addition to enabling them to understand the methods educational programs that aim to streamline and facilitate the teaching-learning issue according to the particularities and individualities of each individual in a community.

Furthermore, it is necessary to disseminate information about the content covered, in view of the territorial situation of the city of Tucuruí-PA in which the article was carried out, as it is a potential risk zone where the largest hydroelectric plant is located. Brazil: the Tucuruí Hydroelectric Power Plant. Therefore, one of the reasons for this study was the limitation of knowledge on the subject, since the local population has a notorious social stratification, in which most of the inhabitants are from the lower class.

The main objective of this work is to report the adoption and use of educational technologies aimed at health education on the issue of Public Emergencies and Calamities, showing how they could occur, what the

consequences and how to act in this situation, considering that the analysis of this tool seeks to sensitize and modify the community's adherence to the risks, which are commonly associated with the presence of the Hydroelectric Power Plant, which may have some impact caused by social or environmental factors and lead to landslides, floods or other consequences.

METHODOLOGY

This is an experience report of a descriptive nature, about the use of an urban model, dummies and rescue equipment in First Aid (PS), as educational technologies on measures and conducts for basic life support, during a situation of emergency and public calamity, aimed at training children and adolescents. Therefore, the research in question took place with 4 classes, 2 from elementary school, 1 from high school and 1 from higher education, which represent instances of the public education network in the city of Tucuruí-Pa.

Thus, the criterion adopted for choosing the sample was convenience, considering the public already regularly enrolled in both institutions, estimating about 122 students, including 75 from elementary school, 35 from high school and 12 from higher education, aged between 11 and 23 years. Thus, it was possible to cover a very diverse population of children, youth and adults, considering the action considered the

performance and school interaction of each of the stakeholders. Regarding the application of technology, it was done between classes, in the morning, from 9:45 am to 10:15 am, during the month of November 2019.

From this, it is important to emphasize that the search took place in 5 stages, considering that in the first one a bibliographic search was carried out, through the search platforms Scielo, Academic Google, PubMed, Lilacs, where the descriptors "educational technology" were indexed, "health education", "emergency care" and "natural disasters", in order to support the training classes and awaken ideas for educational technologies.

Therefore, in the development of a tool to facilitate learning, the corpus of the active methodology is constituted, with a didactic approach, which, according to Oliveira (1999) (6), allows the researcher to describe the type of problem, risks and benefits, as well as the solution hypotheses, in order to associate determinant variables, present proposals for changes or formation of opinions of social groups. In the case of this study, it refers to students from different educational levels.

Thus, the second stage was carried out, with the elaboration of pedagogical proposals, according to each grade, aiming to stimulate the individual, in relation to the theme and activities developed, which were placed by the academic team and chosen by

open voting. In the third phase, the materials needed to make the model were collected, such as rectangular Styrofoam board (size 10mm, width 100x50mm and thickness 1.5 cm), modeling clay, acrylic paint, flat brush, wooden toothpick, porous pen, white glue, cardboard sheet and illustrative toys, with this, the production of the technologies itself took place in 5 days of production.

Then, with the beginning of the fourth stage in order to implement the instruments, first there was a traditional presentation to the students, who were interested in ascertaining the sociocultural knowledge they held on the aforementioned subject, as the technologies would both provide this knowledge and improve the experiences of an emergency and public calamity situation.

Afterwards, a realistic simulative scenario was performed, with the use of pediatric and adult cardiopulmonary resuscitation mannequins, manual resuscitator, board stretcher, cervical collar, cushion and OS materials. Finally, the participants were asked through oral questions about which teaching approach most optimized their study and evaluated the potential for understanding that active activities provided, that is, the real importance of playful-didactic innovations.

RESULTS AND DISCUSSION

The use of playful technologies in active methodology is one of the strategies

that allows the student to have a comprehensive understanding, placing it at the center of the teaching-learning process, facilitating experiences related to the act of educating. Thus, the application of this method supports the adaptation of teaching techniques for assistance, provision of assistance and security for an emergency or public calamities, such as natural disasters in risky territories. In this way, it makes the practice of teaching and understanding a subject not just another obligation, because with these inventions, learning becomes fun and pleasurable, being two essential factors in capturing knowledge more quickly and effectively [7].

With reference to the main results of this report, it is noteworthy that a sample of 122 students participated in the training, with a total of 84 females and 38 males, including children (11 to 12 years old), young people (13 to 17 years old) and adults (18 to 24 years old) and that the parents/guardians, of minors, consented to participate through explanations about the disclosure of the aforementioned data. In this sense, during the course of classes, students were categorized by age, to adapt the mode of speech and methods and learning, a priori a teaching plan was prepared with the guiding topics of the theme, as well as accessible technology for key moments of training.

Regarding the resources used, these were diversified between multimedia (slides,

videos and photographic images); dynamics (question-answers and games of "errors" present in the model, which represented scenes of danger in a tragedy) and simulations (CPR, plank, fracture immobilization, mechanical ventilation and rescue in a risk zone).

At the end of the action, technologies were noted as catalysts for the understanding of the lectures, as their validation was measured qualitatively, according to the degree of knowledge of the students at the beginning and end of the explanation, in addition to the fact that the participant was invited to rate them between good, regular and bad, being able to remove doubts at any time and express with their words if the speech of the speakers was of easy, medium or difficult to understand.

Regarding the limitations found by the study, the adaptation in handling the new methodologies is stated; the difficulty in finding studies that point to the creation of new technologies in the field of rescue in natural disasters, the search to guide students about the true importance of training provided voluntarily and the readaptation of the same content for target audiences.

Therefore, considering that the implementation of new learning mechanisms is essential for the improvement of the permanent health education team, enabling the student to develop neuromotor skills that encourage an assessment of a safe scene and a

quick response in solving the dangerous situation.

In general, the creation of technologies in this educational work must be evaluated by 3 main aspects: 1°) The approach with the child audience; 2°) The approach with the adolescent public and 3°) The approach with the adult public.

The approach to children

Technologies need to be evaluated through their details, both positive and negative, so that their efficiency is proven and, in this way, their objective achieved. With regard to educational technologies, this analysis should focus on the characters of teaching, teacher and student, and how information is passed between the two, in this conjecture, technology assumes the catalyzing function, that is, it facilitates and accelerates the understanding of topics covered [8].

With regard to early childhood education, this association of the teaching-learning process with technologies needs to be detailed, given that innovations need to catch the attention of children, encouraging them to inquire about the content covered, which Gardner (2015) proves) [9]:

> Creativity is in knowing how to use the available information, in making decisions, in going beyond what has been learned, above all, in knowing how to take advantage of any stimulus from the environment to generate alternatives in solving problems

and in the pursuit of quality of life [9].

Taking this into account and assuming that none of the children knew how to proceed in emergency situations and public calamities, the training was started, based on the "Manual for the decree of emergency situation or state of public calamity", published by Ministry of National Integration [10].

Thus, first, the urban model was presented with the traditional methodology, in which the main types of occurrences that generate catastrophic situations were presented, and at this time, emphasis was given to key points that may occur in the region, such as for example: dam rupture, acute myocardial infarction, choking, among other situations [11].

Subsequently, the second stage of teaching was started with a cognitive approach, which sought to offer rewards for those who knew what should be done and acted in each disaster situation. This method was developed through realistic classroom simulations with the classmates themselves [12].

Thus, it was noticed that the public does not show differences in learning when associated with everyday themes, however, there was better acceptance of children when technologies and methodologies need interaction, because these technologies simulate games. However, it is noteworthy that in this type of methodology there was a mess in the classroom, which Bollela and Cezaretti (2017) [13] call "controlled disorder" and affirm as being positive.

> Teachers must accept a certain "controlled disorder" in the classroom, while students learn from each other in discussions and resolution of proposed tasks/problems; despite having less visibility in the inverted classroom [13].

Approaching the teen audience

According to Pratta and Santos (2017) [14], adolescence represents a phase of exploration of individual borders, thus it is characterized by the discovery and questioning about life, norms, friends, among other factors that constitute the person's identity. In this sense, education has to find ways to entertain the student, given the view that at this stage it should not only transmit information, but should promote attractive educational approaches that aim to mediate the student's access to information.

Thus, the humanist approach in the form of an inverted room was chosen as the teaching methodology. Such teaching structure privileges the aspects of the student's personality so that education becomes active, generating space for questioning. So, first, a round of conversation was started, showing situations of calamities and emergencies, asking them what they would do in these situations, motivating them to use their imagination. Later, the room was divided into

groups and training stations were held with themes of calamities and emergencies that can occur in daily life, where first aid procedures were taught and what should be done in each situation [15].

In this sense, the public's eagerness in the proposed activities was noticeable, as everyone actively participated in the entire learning process, demonstrating adherence to the content. Proving that it is essential to approach active technologies and methodologies in schools. However, it is important to emphasize that when working with teenagers, there is the best time to apply the practical class, as the student must previously have a theoretical basis on the subject, so with practice he will create a line of reasoning between literature and application in real situations. According to Gonçalves (2015) [16]:

> Technological devices serve to bridge the gap between theory and practice, respectively, not just being a form of entertainment to expend children's energies, but a means that contributes to intellectual development [16].

The approach to the adult audience

Talking about methodological approaches for teaching young adults in higher education for Esteves (2018) [17] "is talking about the art of teaching and learning", because, in recent years, a series of events have occurred, such as the use of active methodologies, the organization and interdisciplinary content that transformed this level of education, making it unique and different from others.

Thus, considering that university students have a greater theoretical basis, they used the cognitive methodology to investigate the paths taken for them to reach a solution to the problem and thus build their own knowledge. For this, the teaching process was divided into two main moments.

The first was held in the classroom where the urban model was exposed, however, different from the way it was used with children, situations were placed that they would have to solve with professionals, thus instigating their critical-reflective thinking. Then, a real simulation was performed in partnership with the Emergency Care Unit (UPA) outside the university, thus placing them in an imitation of emergency and public calamity as real as possible.

It is understood that education is a construction procedure that requires time and effort, in this bias, during the course of training, it was noticed that university students became more involved in the lessons, thus, gradually, more participation in classes began to emerge, which allowed an exchange of experiences between the participants and the speakers, which resulted in the simulation approaching reality. In this context, the public's eagerness during the performance of imposed practices was noticeable, as everyone

actively participated in the learning process, demonstrating adherence to the content [18].

FINAL CONSIDERATIONS

In summary, educational technologies are extremely important to promote communication and understanding between the community and health professionals, as it encompasses care for the quality of life and human needs of individuals. In addition, it becomes an essential tool for a comprehensive and effective health education, in a holistic way in which the main approach refers to the integration of teaching-service, providing a reformulation of the way of learning.

From this, this process of construction of health actions, collaborate to demystify a series of situations, in addition to promoting and enabling individuals to take the necessary interventions on a specific issue or problem, for example, in situations of calamities, infectious diseases and others illnesses, sharpening the critical-reflective sense of each individual.

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