

# The use of a booklet in schools to promote landslide prevention



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## **ABSTRACT**

Landslides occur predominantly in the rainy season, in spring and summer. The soggy soil increases the risk of accidents in areas of hillsides improperly occupied by families, who, in times of economic crisis, settle in places unfit for housing. Thus, this opinion article aims to make a school booklet with preventive actions against landslides, so that this information reaches the knowledge of children in the 1st year of elementary school, which in a playful and simple way can spread these actions among their social network.

**Keywords:** landslide, slopes, disaster, prevention, civil defense.

## **1 INTRODUCTION**

This paper is the result of the Dissertation for obtaining the title of Master in the course of Master in Security and Civil Defense at the Federal University of Rio de Janeiro, UFF in 2021.

Landslides occur all over the world, under all weather and terrain conditions, causing economic losses and thousands of lives annually (HIGHLAND; BOBROWSKY, 2008). The consequences of landslides are associated with social and environmental problems. The social problems involve homeless and displaced families. The environmental ones, on the other hand, trigger a series of problems that affect the victims involved in the disaster, such as the proliferation of diseases and the destruction of local urban infrastructure (FREITAS et al., 2014).

Landslides are characterized as local problems, but their effects often go beyond this regional barrier, becoming more comprehensive problems, reaching state and even national levels.

Among the preventive actions that can be taken to avoid disasters as landslides occur, are the various awareness campaigns for the population.

Therefore, this work aims to present an educational and playful booklet, aimed at elementary school students, which will address the causes of landslides, ways to prevent these disasters, and ways to mitigate their consequences.

## **2.EXTRA-CLASS ACTIVITIES THAT WORKED**

### **2.1.BOTINHO PROJECT, (CBMERJ, 2021).**

The Little Bot Project, which has been running since 1963, aims to stimulate a culture of prevention of maritime accidents through playful, guided activities. The project covers 25 beaches in the state, and the activities are directed at children and teenagers. The students are divided into three groups: Dolphin (7 to

10 years old), Moby Dick (11 to 14 years old), and Shark (15 to 17 years old). The children receive notions of environmental preservation, guidance on sea conditions, first aid, and tips to avoid drowning (CBMERJ, 2021).

## 2.2. HOMEMADE SERUM CAMPAIGN (PASTORAL DA CRIANÇA,)

The Pastoral da Criança supported the first campaign of homemade serum in Brazil and, since 1983, maintains a permanent way to guide families on the preparation of serum and how it should be offered. To this end, the Pastoral da Criança has developed a "Homemade Serum Campaign Primer", which has been disseminated in schools to guide the preparation of serum, in Conversation Circles, and several meetings that the Pastoral da Criança makes with families. To prevent errors in quantities, which can even aggravate the case of dehydration, the Pastoral da Criança offers the spoon-measuring, distributed free of charge to families with children and pregnant women, accompanied by the Pastoral da Criança in Brazil and in 11 other countries where it operates in 1983 the news about children dying of dehydration was routine and frightening for the number involved. What drove the home serum program was the engagement of all churches of all faiths, schools, and governments, federal, state, and municipal (REINALDIN, 2019).

## 2.3. KIM PROGRAM AT SCHOOL (SOBRASA, 2020).

The Kim at School Program aims to raise awareness among children from 5 to 12 about safe ways to interact with water, indirectly impacting parents to prevent drowning. Kim was a 1 year and 6 months old child who drowned in her home pool and became a symbol in the fight against child drowning, as family and friends joined together to create the drowning prevention campaign. The classes are usually taught by uniformed and equipped lifeguards who use videos and animations to interact with the children (SOBRASA, 2020).

## 2.4. ANTI-SMOKING CAMPAIGN AT SCHOOL, (GOIÂNIA, 2015).

The anti-smoking campaign is part of the Project Viva Sem Cigarro, launched in the division of diseases and noncommunicable diseases of Goiânia, and proposes educational actions related to smoking prevention in school children aged 8 to 12 years. The booklet aims to share important information about a disease that has caused the death of thousands of people worldwide (GOIÂNIA, 2015).

## 3. SCHOOLBOOK ON SLIDE PREVENTION

The purpose of the landslide prevention booklet is to provide elementary school children with information about landslide prevention in a light and playful manner so that it reaches not only the school environment but also the entire family.

The advantage of the booklet is that it is a tool that can be used to stimulate student participation with the different themes approached by the teacher in the classroom.

Concerning the scope of the project in question, it is intended to reach not only elementary school students but also the group of coexistence of these children, since the information can be transmitted in a simple way among them.

The booklet, even thought of as an out-of-class activity, is also part of environmental education.

#### **4. TECHNIQUES FOR MAKING A BOOKLET**

The following are the main points that should be addressed during the making of a children's primer, noting the care needed to approach this topic so sensitive to children, and the fundamental steps presented by the author (BACELAR et al., 2018).

I. Define the objective of the booklet: The objective must be clear from the beginning, otherwise, there is a risk that the booklet will become a merely illustrative artifact

II. Promote a Brainstorm: This is a method of collectively generating new ideas through the participation of diverse individuals in a group;

III. Define the main and secondary messages: This is done by defining the plot and lines that will compose the booklet;

IV. Thematic illustrations: Confection characters and figures that are attractive to the children's audience so that they hold their attention on the main and secondary messages that will be subliminally presented;

V. Scene definition: The group in charge of preparing the booklet must conceive key situations that allow for the transmission of the specific messages defined in the previous steps;

VI. Character speeches: They must be succinct, have a simple language, be appropriate to the technical level of the readers (children's audience); and

VII. Pre-Test: This involves performing a pre-test with a group of pre-defined children.

#### **5. SLIP SIGNALS**

The signs of landslides are quite simple. They show that at any moment a landslide can occur on the slopes. The population must know how to identify them and know how to proceed after identification.

Among the most common signs that a landslide is imminent one can (HIGHLAND; BOBROWSKY, 2008):

I. Springs, seepage, and wet or saturated soil in previously dry areas at the base of slopes.

II. Cracks in snow, ice, soil, rock, or the top of slopes.

III. Sidewalks or slabs that pull away from the ground near slopes; soil that pulls away from foundations.

IV. Fences that are out of plumb or are in a distinctive shape when they have been straight

V. Unusual protuberances or changes in elevation in the ground, sidewalks, curbs, or sidewalks.

VI. Sloping poles, trees, fences, and walls.

VII. Sloping or excessive cracks in concrete floors and foundations.

VIII. Damage to water pipes or other underground structures.

IX. Rapid rise or fall in watercourse levels, possibly accompanied by increased turbidity (turbidity content of water through soil).

X. Jamming of doors and windows and visible open spaces, indicating that walls and frames are changing and warping.

XI. Squeaks pops, or noises in houses, buildings, or woods (e.g., roots cracking or breaking).

XII. Sinking or downward sloping / sagging of roads or paths

## **6. HOW TO PREVENT LANDSLIDES**

Planting or encouraging the natural growth of vegetation can also be an effective means of slope stabilization. Another and PRESERVING VEGETATION

The vegetation cover has several functions, it reduces surface runoff, protects the soil from erosion, minimizes the shock of rain on the ground, makes the water runoff through the leaves, and the roots with their weave, reduces water infiltration, and softens the local temperature, as well as creating a more visually pleasing environment.

### **6.1 REGULAR CONSTRUCTIONS**

Regular constructions can bring several advantages, such as the legalization of the property, which allows the owner to sell it.

## **7. FINAL CONSIDERATIONS**

The construction of a children's booklet represents a challenge to the group that undertakes this kind of project, for it involves a series of precautions that must be taken due to the children's audience, and the necessary care to achieve the question of the objectives. Furthermore, dealing with disasters, such as landslides, that may occur where these children live, without causing a commotion, is one of the biggest challenges of this project, so the methodology used in the confection of this work must be taken with special care in addition to those that should already be observed during the confection of works aimed at the children's audience.

Thus, we found that the best way to address this problem is through prevention, where we saw that among the various ways to do it, one of the most productive is the awareness of the population, especially children and adolescents, taking into account that this public, in the same way, that absorbs information, multiplies it in his living environment.

Thus, the booklet exposed here serves as a model to be disseminated by local Civil Defense agencies, in schools near locations with potential landslide risks.

We also conclude that in addition to the direct benefits of raising the awareness of children on the subject, we can create a culture of prevention in the most vulnerable communities, making children multipliers of information about the signs that precede a landslide.

The child may not have the competence to call the civil defense through the 199 phone number, but he can talk to his teacher, who will be in charge of the communication.

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## APPENDIX:

Proposed Illustrations for booklet suggested in the study presented.



- ✓ EVITANDO DE JOGAR LIXOS NAS RUAS E NAS ENCOSTAS DOS MORROS
- ✓ NÃO CONSTRUINDO EM ÁREAS DE RISCO DE DESLIZAMENTO
- ✓ NÃO DESTRUINDO A VEGETAÇÃO DOS MORROS



GALERINHA FIQUEM ATENTOS AOS SINAIS DE DESLIZAMENTO

AQUI VÃO ALGUMAS DICAS!



- ✓ RACHADURAS NAS PAREDES
- ✓ RACHADURAS NO SOLO



- ✓ EM DIAS CHUVOSOS MANTENHA-SE EM LOCAL SEGURO
- ✓ FIQUE ATENTO AS SIRENES E MENSAGENS DE ALERTA NO CELULAR
- ✓ SE VOCÊ OBSERVAR UM SINAL DE DESLIZAMENTO, PEÇA PARA AVISAR A DEFESA CIVIL PELO NÚMERO 199



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AGORA VAMOS COLORIR O CAMINHÃO DO BOMBEIRO?



ARTE E CRIAÇÃO MICHELLE DIAS PEREIRA SANTA RITA  
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