

# Children's Play Based Disaster Mitigation at SDN 20 Gumarang, Agam District

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**Abstract.** The purpose of this study is to describe earthquake disaster mitigation to increase students' understanding of earthquake disaster preparedness. The method used in this research is descriptive qualitative. Collection of data and information related to research is done by observation and test. The results show that earthquake disaster mitigation can be done through children's games such as poles or gobak sodor and picture games that are able to increase students' understanding and knowledge about the potential for natural disasters that exist in the school environment, namely, earthquakes. Out of a total of 30 students, 25 of them can understand the steps that can be taken when a natural disaster occurs. So that with this understanding, students can socialize or provide information to their friends in the school environment and at home.

**Keywords:** Disaster mitigation, children's play, elementary school.

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## INTRODUCTION

Indonesia is a country that has the highest ranking of disaster-prone, one of which is geological disaster. Because Indonesia has a large population, this disaster has the risk of causing many victims. Given the risks posed, it requires knowledge and understanding of the community regarding natural disasters and what efforts must be made if a disaster occurs and education needs to be carried out early on, one of which is conducting disaster mitigation education in elementary schools.

Based on the observations made by researchers at SD 20 Gumarang, students still do not understand about preparedness and actions in dealing with the threat of disaster. Meanwhile, in Gumarang, Palembayan sub-district, earthquakes often occur. Gumarang is a jorong located in Nagari Tigo Koto Silungkang, Palembayan District, Agam, West Sumatra. With a population of 8,287 and 2,019 households. From 1 to 7 April 2022, the West Sumatra region was shaken 36 times by earthquakes, this data was stated by the Meteorology, Climatology and Geophysics Agency (BMKG), these earthquakes were felt in several areas such as Agam and Pasaman. Based on the problems above, the authors conducted research with the title "Children's Play-Based Disaster Mitigation at SD 20 Gumarang". Earthquake disaster mitigation is a term that describes efforts to reduce earthquake risk or disaster (Supriyono, 2014).

According to Widodo Pawirodikromo (2012), activities to deal with earthquake disasters are: Understanding Disaster Management Plans, preparing Operational Disaster Management plans (Contingency Planning), starting related coordination and involved stakeholders, building awareness of their respective roles or responsibilities (risk sharing), compiling forms of awareness programs, training skills, preparing plans for the movement of material resources, compiling Standard Operations & Procedures (SOP).

Earthquake is the movement of layers of earth's rock originating from the bottom or under the surface of the earth. Earthquakes are understood as ground shaking caused by a sudden loss of energy due to the collapse or slipping of rock masses on the surface (Widodo Pawirodikromo, 2012).

Earthquake disaster mitigation in this study is focused on game-based, namely traditional pole games and playing pictures. Traditional games are games that are passed down from generation to generation through words, writing or actions, and traditional games are games that are passed down from generation to generation or through words, writing or actions using simple games. to amuse or please them and have value in it. Play with simple props for entertainment or fun and with courtesy.

There are many types of traditional games, in fact almost all traditional games teach the importance of publicity through play. Dirgantara (2012) notes that even simple games require other people to play. If this game is played alone it becomes less interesting. This is how human relations are formed.

In addition, traditional games teach responsibility and the importance of playing, cooperation, tactics, speed, agreed rules before playing the game in case of defeat. Responsibility for shared rules or punishments, whether they are general pre-existing rules or agreed-upon specific rules. With this responsibility, children protect themselves from cheating while playing, and winning and losing in games depends on the efforts of the players.

The traditional Gobak Sodor game is a game played in teams to prevent opponents from entering each lane. Another hypothesis put forward by Mulyani (2013) is that the lesson comes from the Gobak Sodor game, which is interactive learning between a goalkeeper and other goalkeepers. Don't be discouraged if one door closes, there are many others.

The 2013 Syllabus states that the material includes the traditional Gobak Sodor game. The Gobak-Sodor game has very important benefits for children's development, cognitive, emotional and psychomotor development of children. Hasanah and Hardiyaanti (2016) suggest that children indirectly learn how to strategize to outsmart their opponents when playing Gobak Sodor. In addition, children can also calculate and predict what will happen with the strategies they develop. Turangan and Reza (2016) state that the Gobak-Sodor game has ethical values such as developing honesty, increasing obedience, developing cooperation, responsibility, hard work, thinking skills, analyzing and developing creativity and developing children's skills.

Galah or Gobak Sodor games are very suitable to be played with friends. This sport can improve motor movement, teamwork, and perfect tactics. Teams that can work well together will win faster. Although it requires a lot of energy, this game is great for practicing balance and agility. How to Play: (1) The players make lines, like badminton, to determine the defensive position of each team, (2) The game consists of two teams consisting of three-five players. One team will act as the guard team and the other as the player team. (3) The guard team must take a defensive position so that the enemy cannot cross the predetermined line, (4) The game has horizontal lines and vertical lines that cannot be crossed, (5) The opposing team can move at the same time or independently depending on the strategy used, (6) When the opposing team passes the starting point, players may not retreat and must pass the next obstacle to win, (7) The opposing team must try not to be caught by the guard team. If a member of the opposing team is caught or crosses the line, the game ends and positions are changed. (8) All members of the opposing team must complete all existing obstacles. When all members enter the final zone, it means that team gets points and wins the game. (Setiono, 2021).

The benefits of this pole game are training in an unyielding attitude, training focus, training agility and body strength, which is closely related to how to protect yourself from earthquakes. When an earthquake occurs, you should not panic, stay focused, and try to save yourself. Playing pictures is done in pairs, the game that is carried out is a picture tapping game by the teacher providing several pictures related to earthquake mitigation, then distributing them to each student, students and their respective partners start the game if it has been allowed by the teacher, divide the student who lost, namely what appeared was the back of the picture, the student told a picture about earthquake disaster mitigation.

## **METHOD**

The research method used is a qualitative descriptive method, namely a method that describes all symptoms or conditions that occur during research and produces general reports. Sukmadinata (2017), argues that a qualitative descriptive research method is a method used to explain and describe existing facts, both natural and human-made.

The qualitative descriptive research method is a research method based on the philosophy of postpositivism which is commonly used to examine the condition of natural objects (Sugiyono, 2018). The method used is by carrying out pretest activities to students, then carrying out a simulation using children's games that have been prepared and ending with post test activities.

This research was carried out on September 28, 29 and 30, 2022 at SD 20 Gumarang, with 30 class IV students at SD 20 Gumarang as subjects.

## RESULTS

Knowledge about natural disasters is basically knowledge that involves many scientific studies. A very important handling that can be done is to teach or educate students to be literate about natural disasters. Game-based learning is considered very effective in making students aware of disasters that can threaten and efforts that can be made to overcome them. Then students can also disseminate the knowledge they get to other friends, to their families and the community in their neighborhood.

SD Negeri 20 Gumarang is an elementary school located in Palbayan, which is an area prone to earthquakes, therefore the community must be prepared if an earthquake suddenly occurs. Preparedness is not only meant for adults, but children also really need to be given education about preparedness. Children can be taught flood preparedness or mitigation through game-based learning.

The initial activity carried out was to socialize by showing videos of natural disasters and steps to overcome them. Then a question and answer session was carried out, the students were very excited there were 10 questions that the students could answer well. Students really enjoyed this activity. The next activity is a posttest to evaluate the level of students' understanding of disaster material.

**Table 1.** Number of Students

Gender	Total students	Percentage
Man	18	60%
Woman	12	40%
Total	30	100%

Based on the table above, it can be seen that the number of male students is greater, namely 60%, compared to female students which amount to 40% of the total 30 students.

**Table 2.** Results of the average pretest and posttest scores

Evaluation	average value
pretest	65.5
posttest	91.8

Based on table 2. It was found that the average *pretest score* was 65.5 and the posttest average score was 91.8.

Table 1 states that the number of male students is 60% higher, compared to 40% of female students out of a total of 30 students. This is in accordance with data from the ministry of women's empowerment and child protection that the number of boys aged 7-17 years is more than girls. (Ministry of Women's Empowerment and Child Protection and the Central Bureau of Statistics, 2019).

From table 2, it can be concluded that there was a significant change from the pre-test value of 65.5, after counseling was carried out to 91.8, this proves that traditional children's games about disasters are very beneficial for students in reducing disaster risk, this is in line with research conducted by (Sukamto, Nurhidayat, & Verawati, 2021) that education and simulations about disaster response provided to students can reduce disaster risk to school children.



**Figure 1.** Galah or Gobak Sodor game



**Figure 2.** mapping the potential for natural disasters

## **DISCUSSION**

### **1. Disaster mitigation**

Mitigation is an effort to reduce the impact of environmental damage due to disasters. There are four ways to deal with disasters, namely mitigation, preparedness, response and normalization. Disaster Mitigation is an effort made to reduce the risks and impacts caused by disasters on communities in disaster-prone areas, whether natural disasters, man-made disasters or a combination of the two within a country or community.

There are four important things that need to be considered in disaster mitigation, including the availability of information and maps of disaster-prone areas for each category of disaster, socialization in increasing public understanding and awareness in dealing with disasters, knowing what needs to be done and avoided and how to save yourself if a disaster occurs at any time. -time and arrangement, arrangement of disaster-prone areas to reduce the threat of disaster.

The goal of mitigation itself is to reduce losses in the event of a hazard in the future, reduce the risk of death and injury to residents, including reducing damage and economic losses caused to public sector infrastructure.

Early warning to report the results of continuous observations in a disaster-prone area, with the aim of making the community more alert. The early warning is disseminated to the public through the local government with the aim of raising public awareness in avoiding disasters. Early warning and the results of monitoring disaster-prone areas in the form of technical advice, diversion of road routes (temporarily or permanently), evacuation and other suggestions for handling.

## 2. Game Galah or gobak sodor

As a well-known game in Indonesia, it turns out that galah is not from Indonesia. A number of Dutch literature mention that the word galah or gobak sodor is taken from *Go Back Through The Door* which means to penetrate the door.

The mention comes from Indonesians who find it difficult to pronounce in a foreign language so that it becomes gobak sodor. In addition, gobak sodor was recorded in a Javanese dictionary book (Baoesastra) written by WJS Poerwadarminto which was published by JB Wolters Uitgevers Maatschappij NV Groningen, Batavia in 1939. There are other facts about this game, one of which is a pole or gobak sodor which means moving freely with a spear. Gobak means to move freely and sodor means spear. This description is because in the past the soldiers used to play a game called sodoran to practice spear fighting skills.

### How to play

**Gobak Sodor** This game consists of two teams, where each team consists of 3 - 10 people with equal numbers. The next step is to prepare a rectangular field or land which is divided into 6. Marking lines can be made with chalk or duct tape. The two teams that take part in the match act as the guard team and the attack team.

The game, each dividing line has a guard player. The team whose duty is to keep the line, they will hinder the opposing team trying to cross the predetermined boundary line. Meanwhile, a team that works on a vertical line (usually one person), he has access to the entire vertical line which is located in the middle of the field. Meanwhile, the attacking team will send their players one by one to get past the guards on each line. if the opponent is touched by the line guard, then they take turns being the line guard. The winner is determined by how many players pass the line keeper.

### Game Benefits

This game requires extra energy, both from line keepers and opposing players. The gobak sodor game is to train dexterity, ingenuity, and teamwork.

### Picture Game

The picture clap game is usually liked by boys. There are two players involved in this game. Before playing they must have a number of picture cards to be played. Picture cards are made of thin cardboard with various picture models, like those seen in children's films that are currently popular on television. An image sheet filled with one part, the other part is blank (no picture). These pictures are usually obtained in stalls or child toy guards at schools. The size and size of the images vary greatly, some are small and some are large.

The picture clap game does not require any special skills from the players. Importantly, he can choose a featured drawing sheet that always has an open drawing section. The luck factor is the most decisive thing in the picture clap game.

How to play the image clap is quite easy. First of all, the player chooses the most superior image to play. They put the image on the open palm of the right hand. Both palms complained and then pulled back. At that moment, the image detached and fell flying downwards. The image that reaches the bottom in an open position (the picture part is visible) is declared victorious if the opponent's image is closed, that means the game is declared a draw. Players who lose must pay players who win with an agreed number of pictures. The game ends when both parties agree to stop.

However, in the disaster mitigation activities carried out, the images used are those related to natural disasters that often occur in Indonesia. Then students can carry out the self-rescue process when the image that appears is one of the pictures about natural disasters. For example, when an image of an earthquake appears, students immediately save themselves by hiding themselves under a table or immediately running into the field. This game has game rules that are relevant to the theory of behaviorism. Behaviorism theory states that learning media provides the concept of repetition and reward.

## CONCLUSION

Based on the results of the research that has been done, it can be concluded that disaster mitigation education is very important to be taught in schools considering that Indonesia has the potential to experience various types of natural disasters. This needs to be done to reduce the risk or impact of natural disasters that occur. Children are included in the vulnerable group to disasters, this is triggered by the limited understanding of the risks that will be experienced.

The initial treatment that can be done and is very basic is to educate the public to be "literate" about natural disasters through learning in schools so that people can be more aware as early as possible. Flood mitigation learning in schools can be done through learning in schools such as thematic learning, the use of comic media, scout extracurriculars, and seminars. One of the disaster mitigation activities includes children's play-based activities, where it is known that the level of understanding and knowledge of students regarding disaster mitigation is very good, most students have understood material about earthquake mitigation, it can be concluded that this children's game-based earthquake mitigation research was successfully carried out at SDN 20 Gumarang.

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## REFERENCES

- Agustiana, I. G. A. T., Wibawa, I. M. C., & Tika, I. N. (2013). Pengaruh Model Pembelajaran Mitigasi Dan Ketahananmalangan Siswa. *Jurnal Pendidikan Dan Pengajaran*, 46(2), 97–105.
- Amini, R. (2015). Outdoor based environmental education learning and its effect in caring attitude toward environment. *Jurnal Pendidikan IPA Indonesia*, 4(1), 43–47. <https://doi.org/10.15294/jpii.v4i1.3500>
- Andreas, L. O., Rifwan, F., Gusmareta, Y., & Silalahi, J. (2019). Pengenalan Bencana Dan Zona Evakuasi Dalam Bentuk Kesiapsiagaan Berbasis Kearifan Lokal Bagi Generasi Muda Kecamatan Matur Kabupaten Agam Sumatera Barat. *Cived, Eissn: 2622-6774*, 5(4), 1–4.
- Arisona, R. D. (2020). Meningkatkan Kesiapsiagaan Siswa Sdn 2 Wates Ponorogo. *Journal of Social Science And Education*, 1(1), 1–7. <https://jurnal.iainponorogo.ac.id/index.php/asanka/article/view/1939/1214>
- Efendi, N., Baskara, R. S., & Fitria, Y. (2020). Implementasi Karakter Peduli Lingkungan Di Sdn 13 Lolong Belanti Padang. *Jurnal Pendidikan Ilmu Sosial*, 29(2), 155–165. <https://doi.org/10.23917/jpis.v29i2.9747>
- Ernawati, R., Dirdjo, M. M., & Wahyuni, M. (2021). Peningkatan Pengetahuan Siswa Terhadap Mitigasi Bencana di SD Muhammadiyah 4 Samarinda. *Journal of Community Engagement in ...*, 4(2), 393–399. <https://jceh.org/index.php/JCEH/article/view/258>
- Haryanto, H., & Lakoro, R. (2012). Game Edukasi " Evakuator " Bergenre Puzzle Dengan Gameplay Berbasis Klasifikasi Sebagai SGAME EDUKASI "EVAKUATOR" BERGENRE PUZZLE DENGAN GAMEPLAY BERBASIS KLASIFIKASI SEBAGAI SARANA PENDIDIKAN DALAM MITIGASI BENCANA. *Techno.COM*, 11(1), 47–54. <http://publikasi.dinus.ac.id/index.php/technoc/issue/view/65>
- Indra, W., & Fitria, Y. (2021). Pengembangan Media Games IPA Edukatif Berbantuan Aplikasi Appsgeyser Berbasis Model PBL untuk Meningkatkan Karakter Peduli Lingkungan Siswa Sekolah Dasar. *Jurnal Edukasi Matematika Dan Sains*, 9(1), 59–66. <https://doi.org/10.25273/jems.v9i1.8654>
- Kasengke, A., Khoirunisa, N., Uhan, K., Dasar, P., Daerah, D. Di, Bencana, R., & Tara, A. (2011). ARTI PENTING PENDIDIKAN MITIGASI BENCANA DALAM MENGURANGI RESIKO BENCANA Related papers Proseding Konferensi Nasional FPT PRB 2015-ANALISA KESIAPSIAGAAN SISWA PADA SAT U.... *Arti Penting Pendidikan Mitgasi Bencana Dalam Mengurangi Resiko Bencana*, 174–187.

- Nugroho, A. (2018). Pengembangan Model Pembelajaran Mitigasi Bencana Gunung Meletus Di Sekolah Dasar Lereng Gunung Slamet. *Jurnal Pengabdian Masyarakat Multidisiplin*, 1(2), 131–137. <https://doi.org/10.36341/jpm.v1i2.413>
- NURHIDAYATI, S., & Alhadi, Z. (2021). Kendala Dalam Menanggulangi Bencana Longsor Berdasarkan Badan Penanggulangan Bencana Daerah Di Kabupaten Agam. *Jurnal Teori Dan Riset Administrasi Publik*, 5(1), 92–99. <http://jtrap.ppj.unp.ac.id/index.php/JTRAP/article/view/48>
- Oktorie, O. (2017). A Study of Landslide Areas Mitigation and Adaptation in Palupuah Subdistrict, Agam Regency, West Sumatra Province, Indonesia. *Sumatra Journal of Disaster, Geography and Geography Education*, 1(1), 43. <https://doi.org/10.24036/sjdgge.v1i1.34>
- Pahleviannur, M. R. (2019). Edukasi Sadar Bencana Melalui Sosialisasi Kebencanaan Sebagai Upaya Peningkatan Pengetahuan Siswa Terhadap Mitigasi Bencana. *Jurnal Pendidikan Ilmu Sosial*, 29(1), 49–55. <https://doi.org/10.23917/jpis.v29i1.8203>
- Pambudi, D. I. (2019). Pengembangan Media Pop Up Book Sebagai Edukasi Mitigasi Bencana Bagi Siswa Sekolah Dasar. *Seminar Nasional AVoER XI 2019 Palembang*, 23–24.
- Permana, R. C. E., Nasution, I. P., & Gunawijaya, J. (2011). Kearifan Lokal Tentang Mitigasi Bencana Pada Masyarakat Baduy. *Makara Human Behavior Studies in Asia*, 15 (1), 67. 15(1), 67–76.
- Permatasari, A. L., & Rizky. (2019). Pengetahuan Mitigasi Non Struktural Bencana Gempabumi Pada Siswa Sekolah Dasar Sd Negeri Srumbung Segoroyoso Pleret Bantul Yogyakarta. *Prosiding Seminar Nasional Geotik*, 167–176.
- Pujianto, A., Faizah, R., & Monika, F. (2021). Mitigasi Bencana pada Siswa Sekolah Dasar. *Prosiding Seminar Nasional Program ...*, 2363–2368. <https://doi.org/10.18196/ppm.47.727>
- Putra, A. W. S., & Podo, Y. (2017). Faktor-faktor yang mempengaruhi tingkat pengetahuan masyarakat dalam mitigasi bencana alam tanah longsor. *Urecol 6th*, 305–314. <http://journal.unimma.ac.id/index.php/urecol/article/view/1549>
- Risda Amini & A. munandar. (2010). Pengaruh model pembelajaran pendidikan lingkungan berbasis. *Jurnal Penelitian Pendidikan*, 11(1), 14–21.
- Rusilowati, A., & Binadja, A. (2012). Mitigasi Bencana Alam Berbasis Pembelajaran Bervisi Science Environment Technology and Society. *Jurnal Pendidikan Fisika Indonesia*, 8(1), 51–60.
- Setiono, P. (2021). Analisis Kebutuhan Pengembangan Model Pembelajaran Pengetahuan Mitigasi Bencana Gempabumi Berbasis Permainan Tradisional Bengkulu. *Geodika: Jurnal Kajian Ilmu Dan Pendidikan Geografi*, 5(1), 1–10. <https://doi.org/10.29408/geodika.v5i1.2975>
- Subagia, I. W. (2015). Pelatihan Mitigasi Bencana Alam Gempa Bumi Pada Siswa Sekolah Dasar Negeri 1 Pengastulan Kecamatan Seririt Kabupaten Buleleng Bali. *JPI (Jurnal Pendidikan Indonesia)*, 4(1), 585–598. <https://doi.org/10.23887/jpi-undiksha.v4i1.4916>
- Ulfa, E. H., Rijal, A. S., Matalapu, I., Jaya, R., Maulana, K. M., Purwandari, E. P., Winarni, E. W., Andreswari, D., Andrian, D., & Apriyanti, W. (2021). Animasi Edukasi Kesiapsiagaan Gempa Bumi Sebagai Sumber Literasi Bencana. *LaGeografia*, 19(1), 123–132. [www.wartabencana.com](http://www.wartabencana.com).
- Utama, R. I., Syah, N., Rifwa, F., Sari, N. M., & Yandra, M. (2018). Penerapan dan Sosialisasi Sekolah Siaga Bencana Bagi Anak-anak Sekolah Dasar di Kabupaten Agam. *Cived, Eissn: 2622-6774*, 5(4), 4–8.
- Wahyudi, M. R., & Alhadi, Z. (2021). Pendekatan Dalam Mitigasi Bencana Tanah Longsor Di Kenagarian Sungai Landia Kecamatan Iv Koto Kabupaten Agam. *Jurnal Manajemen Dan Ilmu Administrasi Publik (JMIAP)*, 3(1), 47–55. <https://doi.org/10.24036/jmiap.v3i1.227>
- Wicaksana, A. (2016). 濟無No Title No Title No Title. <https://Medium.Com/>, 08. <https://medium.com/@arifwicaksanaa/pengertian-use-case-a7e576e1b6bf>
- Yati, W., & Amini, R. (2020). Pengembangan Bahan Ajar Dengan Pendekatan Cooperative Learning Tipe Turnamen Di Sekolah Dasar. *Jurnal Basicedu*, 4(1), 158–167. <https://doi.org/10.31004/basicedu.v4i1.335>