

Implementation of the Snakes and Ladders Educational Game as a Landslide Mitigation Education Media and Its Effect on Student Knowledge

Sinta Kusumaningjati¹, Ni'am Khakiki², Risma Martiyani³,
Dewi Liesnoor Setyowati⁴, Erni Suharini⁵

^{1,2,3,4,5} Magister Study Program of Geography Education, Faculty of Science Social and Knowledge Political, University Country Semarang, Semarang Central Java, Indonesia.

Corresponding Author: Sinta Kusumaningjati

DOI: <https://doi.org/10.52403/ijrr.20240704>

ABSTRACT

MA Riyadhus Sholihin Al Islamy not yet utilize learning media in the material disaster, namely learning uses the lecture method with textbooks and this creates learning boring. Apart from that, MA Riyadhus Sholihin Al Islamy located in the area Ward Ngijo Subdistrict Gunungpati has potential disaster land landslide marked with levels high rainfall and vulnerability high landslides. The aim of this research is first know implementation of educational games snake stairs as a medium for mitigating land disasters landslide for student. Second aim analyze influence of educational games snake stairs as a medium for mitigating land disasters landslide on students' knowledge. The type of research used is descriptive quantitative, with data collection methods of observation, unstructured interviews, documentation and using pretest-posttest. The results of this research are that students can play educational games by being able to answer questions about landslide disaster material well. Then the influence of the snakes and ladders educational game can also increase students' knowledge regarding landslide disaster mitigation and can also trigger active learning in students so that the learning process is more interesting and not boring.

Keywords: Educational games, outreach media, landslide mitigation, level of knowledge

INTRODUCTION

Gunungpati District near Mount Ungaran, Semarang Regency at an altitude of 259 meters with an average rainfall of 1,853 mm/month is one of the disaster-prone areas. The topography of the land surface is wavy and there are steep/ravine lands in several locations. Gunungpati District is in the southern part of Semarang City with a total area of 5,399,085 Ha divided into 16 sub-districts, one of which is Ngijo Sub-district. Ngijo District was recorded as having experienced landslides twice in 2022. The first was a landslide river embankment located at RT 03 RW 02, Ngijo Village, Gunungpati District, with a size of 5 x 10 meters. Then the Talud in RW 1 Puntan Hamlet collapsed and hit three residents' houses. The landslide was caused by the high intensity of rainfall (1). These conditions make the government try to carry out disaster mitigation activities by involving the education sector. Disaster mitigation can increase awareness and provide guidance to the community regarding disaster management as early as possible. Therefore, to minimize the occurrence of victims due to disasters, awareness and awareness is needed

students' preparedness in facing disasters. The new paradigm in disaster management emphasizes the importance of preventive action before a disaster occurs as the main effort to minimize risks, rather than only focusing on emergency response when a disaster has already occurred. Pre-disaster measures must be a priority in disaster management. Efforts in disaster mitigation education are divided into three pillars, namely (1) safe school facilities, (2) disaster management in the school environment, and (3) providing education about disaster risk prevention and reduction (2). Learning geography material about disasters at MA Riyadhus Sholihin Al Islamy still uses the lecture method with textbooks. This method causes boredom in children. Therefore, teachers should provide evaluations by utilizing and using varied and creative learning media so that learning will be more interesting for students (3). Learning media is media that is used as a tool and material for learning activities (4). Thus, by using learning media, the teaching and learning process becomes more interesting and more effective so that the learning process can run more efficiently. In this case, the game was chosen as a learning medium because it aims to reduce monotony in learning activities to create enjoyable teaching and learning activities (5). Teachers can also utilize existing learning media and then implement it by modifying it according to the material taught in the lesson. The choice of learning media must be appropriate to the material and students' conditions. So it is hoped that students can participate actively in learning activities. One example is using the snakes and ladders game as an educational medium for landslide disaster mitigation at MA Riyadhus Sholihin Al Islamy. The snakes and ladders game is a traditional board game that displays pictures of snakes and ladders on a board divided into 100 numbered squares (6). The selection of snakes and ladders game media is a suitable learning media to be developed. Learning based on the snakes and ladders game media is adapted to student characteristics with the

aim of achieving learning objectives as an information medium for delivering material to students. It also states that the snakes and ladders learning media is an effective medium for increasing students' absorption and understanding in learning (7). Based on the background of this problem, researchers are interested in researching the influence of the snakes and ladders educational game as a medium for counseling on landslide disaster mitigation on the knowledge of Ma Riyadhus Sholihin Al Islamy students.

REVIEW REFERENCES

Education

Education is any condition, thing, incident, event or thing the process of changing attitudes and behavior of a person or group of people in an effort to mature themselves through a learning and training system (8). Education has the aim of providing many benefits to humans as recipients of education (8), including: (1) Through education, knowledge becomes broader, (2) Personality improves, and (3) Investing oneself in developing existing talents or gifts.

Game Media (Educational Games)

Learning media is physical equipment that presents and conveys the main points of learning. Learning media are tools and materials, methods and techniques used to create effective relationships between educators and students in school level education and teaching and learning activities in the classroom (9). The use of learning media can stimulate students to think critically, by using their abilities, imagination and attitudes which are further developed so as to give rise to creativity and innovative work (10).

Educational game tools are facilities or equipment that can be used for play that contain educational value and can develop all children's abilities (11). The media of the snakes and ladders game can influence students' knowledge and attitudes and can generate student interest because in the snakes and ladders game there is an element of competence to win over other groups.

Apart from that, the snakes and ladders learning media is also an effective medium for increasing students' absorption and understanding in learning (12).

Landslide Disaster Mitigation

Disaster is a series of efforts to reduce the risk of disaster, both through physical development and awareness and increasing capacity to face the threat of disaster (13). Landslide disaster mitigation in Indonesia refers to the Disaster Management Law, through three stages (pre-disaster, during a disaster, and post-disaster) which are carried out both structurally and non-structurally (13).

The first stage (pre-disaster) activities carried out were mapping of land movement vulnerability and disaster risk zones, continuous monitoring of land movement, early warning and information dissemination, ground movement investigation, strengthening community resilience, and mitigating structural ground movement. Strengthening community resilience is carried out through activities utilizing community resources, disseminating disaster information, outreach and counseling, disaster education and training, and contingency planning. Meanwhile, structural ground movement mitigation is carried out, among other things, by moving settlements from areas prone to ground movement and/or carrying out technological engineering. The second stage (during a disaster) The activities carried out are a disaster emergency. In this stage, an evaluation of the potential for subsequent ground movements, the impact and distribution of ground movements, technical recommendations for mitigation measures and restoration of facilities and infrastructure is carried out. The third stage (post-disaster) activities carried out are determining areas for safe relocation against disasters, repairing or rehabilitating the environment of disaster areas, repairing or rebuilding public infrastructure and facilities.

MATERIALS AND METHODS

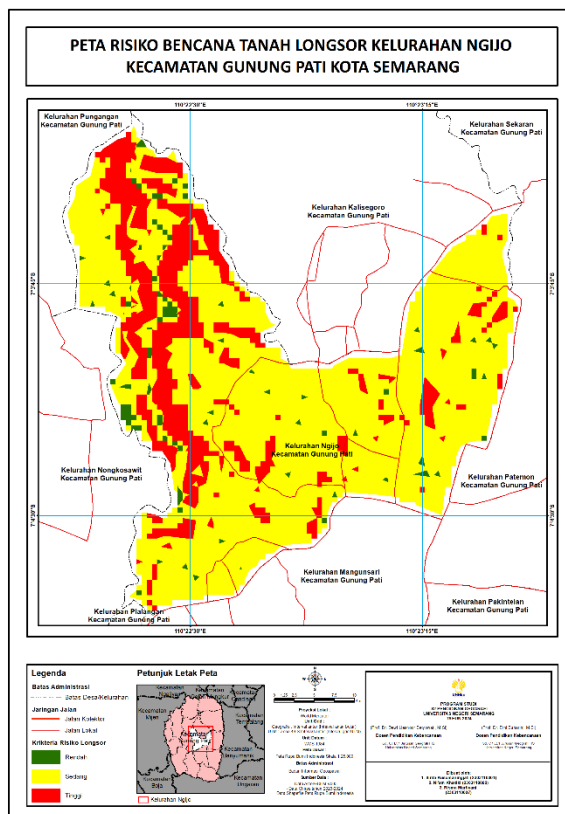
This research is field research with a descriptive quantitative approach. This research was conducted at MA Riyadlus Sholihin Al Islamy, Ngijo Village, Gunung Pati District, Semarang City. Population in this study namely class XI IPS MA Riyadlus Sholihin Al Islamy as many as 50 students, while the sample was 25 students. The data collection methods used in this research are observation, interviews, documentation and also using pretest-posttest. Observations were carried out to determine the learning of disaster material at MA Riyadlus Sholihin Al Islamy and to determine the potential for disaster in the environment around the school by looking at conditions, vegetation density, previous landslide events, rainfall and use of the surrounding land. The type of interview in this research was unstructured and the respondents in this research were class XI social studies students and XI MA geography teacher Riyadlus Sholihin Al Islamy. Documentation takes the form of collecting library data in the form of secondary data such as journals, articles and so on. Then the researchers used a pretest-posttest to determine the level of students' knowledge before and after using the snakes and ladders educational game as a medium for counseling on landslide disaster mitigation.

DISCUSSION

Implementation of the Snakes and Ladders Educational Game as a Media for Landslide Disaster Mitigation Counseling

This research is in the form of implementing an educational game snakes and ladders, which contains information about mitigating landslides and how to deal with them. The selection of disasters has been adjusted to the potential for disasters at the research location, namely the MA Riyadlus Sholihin Al Islamy school which is located in Ngijo Village, Gunung Pati District, Semarang City.

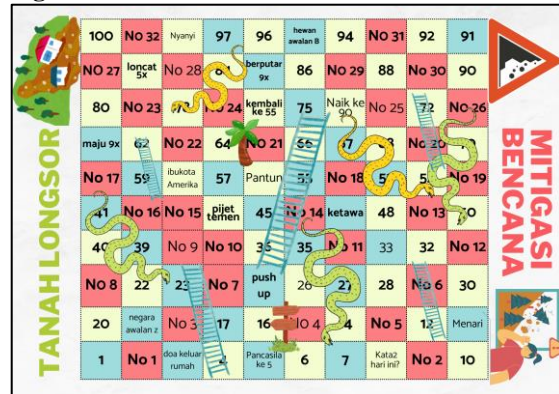
Figure 1. Landslide Disaster Risk Map, Ngijo Village, Kec, Gunung Pati, Semarang City



Source: Research Documentation, 2024

Based on Figure 1, Ngijo Village, Gunung Pati District is an area that is vulnerable to landslides. This can be seen from Figure 1, that Ngijo District is dominated by the highest level of landslides, namely the medium criteria (yellow) and the high criteria landslide level (red) dominates the second position. The influence of the high risk of landslides in Ngijo District is that the hilly topography and unstable soil conditions make it prone to ground movement, especially during the rainy season. This is also supported by the increasing threat of the existence of forests due to land conversion, namely from forests turning into settlements. In the snakes and ladders educational game created in this research, it presents information in the form of landslide mitigation disaster information with an attractive appearance.

Figure 2. Snakes and Ladders Educational Game



Source : Documentation Research , 2024

The form of the snakes and ladders game is in the form of boxes on a board or flat surface played by two or more people. The principle of the snakes and ladders game is to roll the dice, then the number of numbers on the dice is adjusted to the box in the snakes and ladders. This box contains questions related to mitigation, later participants are asked to answer these questions in turn. Then the questions were made in the form of questions regarding knowledge of landslide disaster mitigation both in general and practical knowledge about how to protect yourself. Apart from that, a challenge box is presented where students will then carry out commands according to the provisions in the challenge box, for example singing, rhyming, push ups or dancing and so on. This snakes and ladders game is made in a size of 2m x 2m, so this game is carried out in front of the class in groups and taking turns. The use of the snakes and ladders educational game allows for active participation of students in the learning process and is also able to provide direct feedback during the learning process.

The Influence of the Educational Game Snakes and Ladders as a Media for Landslide Disaster Mitigation Counseling on Students' Knowledge

The medium of playing while learning in the form of the snakes and ladders educational game is used as a medium for conveying information regarding landslide disaster mitigation. By using this media, it can make it easier for students to understand landslide disaster mitigation material and can trigger

student activity in the classroom during the learning process.

The effect of using the snakes and ladders educational game as a medium for counseling on landslide disaster mitigation is that it is able to increase students' level of knowledge and insight regarding landslide disaster mitigation. This can be seen from the results of *the pretest* (before) and *posttest* (after) in table 1 of MA Riyadlus Sholihin Al-Islamy students who have taken the test. The results show that the *post-test score* has increased significantly.

Table 1. Data Test Results Pretest and Posttest Values

Mark	Mean	Min	Max
Pretest	67.68	48	88
Posttest	88.64	72	100

Source: Research Data, 2024

Based on table 1, it can be explained that the average student *pretest score* before holding the educational *game* snakes and ladders for landslide disaster mitigation got an average score of 67.68, the lowest score obtained on *the pretest* was 48, and the highest score obtained on *the pretest* was 88. Then, after the snakes and ladders educational game for landslide disaster mitigation was carried out, the students' average score was 88.64, with the lowest score being 72 and the highest score obtained in *the post test* being 100. from 67.68 during *the pretest* to an average score of 88.64 during *the posttest*, an increase in the score of 20.96 proves that the treatment given is effective in increasing students' overall knowledge. The minimum student score also increased from a *pretest score* of 48 to a minimum student score of 72 during *the posttest*. This increase reflects that students with the lowest scores experienced significant improvements after the snakes and ladders educational game for landslide disaster mitigation. Then the maximum score for students also experienced an increase from a *pretest score* of 88 to a score of 100 at the *posttest*. This shows that students were able to achieve perfect scores after treatment in the form of an educational *game* of snakes and ladders for landslide disaster mitigation,

which may not have been achieved previously.

This data shows that there is a significant influence of knowledge due to using the snakes and ladders educational *game* for landslide disaster mitigation. This can be seen from the increase in the average score, minimum score and maximum score of students who have played the snakes and ladders educational *game* for landslide disaster mitigation and have carried out *the posttest*. So it can be concluded that the snakes and ladders educational game for landslide disaster mitigation that was implemented was effective in improving the abilities or knowledge of class XI MA Riyadlus Sholihin Al-Islamy students. In line with the results obtained, the use of the snakes and ladders game media can influence students' knowledge and attitudes and can generate student interest because in the snakes and ladders game there is an element of competence to win over other groups (12). Apart from that, snakes and ladders media is also able to reconstruct students' knowledge and can trigger student activity in class. So by implementing the snakes and ladders educational game as well, it can make the learning process fun and not monotonous. The snakes and ladders educational game also makes learning less boring because students can learn while playing, so students don't experience difficulties and become enthusiastic about learning. This is in line with the benefits of educational media which can generate interest, avoid feelings of boredom and boredom, help overcome difficulties in understanding, make it easier to convey information and make it easier for recipients of information (12).

CONCLUSION

This research seeks to implement the snakes and ladders educational game, which contains information about landslide disaster mitigation and how to deal with it so that disaster material in geography learning becomes easier for students to understand. The selection of disasters has also been adjusted to the potential for disasters at the

research location, namely MA Riyadlus Sholihin Al Islamy which is located in Ngijo Village, Gunung Pati District, Semarang City. Ngijo sub-district has a higher frequency of landslides each year compared to other sub-districts. The influence of the snakes and ladders educational game as a medium for providing information on landslide disaster mitigation is that it can increase students' knowledge and insight regarding landslide disaster mitigation. Apart from that, snakes and ladders media is also able to reconstruct students' knowledge and is also expected to trigger student activity, thus making the learning process more enjoyable.

Declaration by Writer

Source Funding: None

Conflict of Interest: The authors declare No There is conflict of interest

REFERENCE

1. BPBD Kota Semarang, 2022. "Talud Sungai Longsor Rt 03 Rw 02 Kelurahan Ngijo Kecamatan Gunungpati". <https://bpbk.semarangkota.go.id/detailpost/talud-sungai-longsor-rt-03-rw-02-kelurahan-ngijo-kecamatan-gunungpati>
2. Kemendikbud. 2015. Modul Pilar 3 - Pendidikan Pencegahan dan Pengurangan Risiko Bencana. Jakarta: Sekretariat Jenderal Kemendikbud.
3. Citra, C. A., & Rosy, B. 2020. Keefektifan penggunaan media pembelajaran berbasis game edukasi quizizz terhadap hasil belajar teknologi perkantoran siswa kelas X SMK Ketintang Surabaya. *Jurnal Pendidikan Administrasi Perkantoran (JPAP)*, 8(2), 261-27
4. Daryanto. 2016. *Media pembelajaran*. Yogyakarta: Gava Media.
5. Setiani, Gusti Ayu Komang, I Gusti Ayu T.A, & Dewa A. P.H. 2022. "Permainan Ular Tangga: Media Pembelajaran Siswa Kelas V Sekolah Dasar". *Jurnal Mimbar Ilmu*. Vol.27. No.2.
6. Rahmayani, Y., & Sumitra, A. 2022. Pembelajaran Berhitung Melalui Media Permainan Ular Tangga Pada Anak Usia Dini. *Ceria (Cerdas Energik Responsif Inovatif Adaptif)*, 5(2), 164. <https://doi.org/10.22460/ceria.v5i2.10327>
7. Sabila, Safa. Khoirun N.N.M. , Sabrina S.A & Nailal Khasanah . 2021. "Pengaplikasian Game Edukasi (Ular Tangga) untuk Meningkatkan Konsentrasi terhadap Minat Belajar Peserta Didik". *Prosiding SEMAI Seminar Nasional PGMI 2021*. IAIN Pekalongan.
8. Gunawan, Heri. 2021. *Pendidikan Karakter, Konsep dan Implementasi*. Bandung: Alfabeta.
9. Darmadi. 2017. *Pengembangan Metode Pembelajaran dalam Dinamika Belajar Siswa*. Jakarta: Rineka Cipta.
10. Hasan, Muhammad dkk. 2021. *Media Pembelajaran*. Tahta Media Group:Klaten.
11. Permendikbud. 2021. *Alat Permainan Edukatif*.
12. Rahmawati, Ade dan Sukhriyatun Fitriyah. 2020. Efektivitas Media Permainan Ular Tangga terhadap Sikap Siswa dalam Membuang Sampah. *The Indonesian Journal of Health Promotion*, Vol., 3 No., 3.
13. Undang-Undang Nomor 24 Tahun 2007 tentang Penanggulangan Bencana.
14. Setiani, Gusti Ayu Komang, I Gusti Ayu T.A, & Dewa A. P.H. 2022. "Permainan Ular Tangga: Media Pembelajaran Siswa Kelas V Sekolah Dasar". *Jurnal Mimbar Ilmu*. Vol.27. No.2.

How to cite this article: Sinta Kusumaningjati, Ni'am Khakiki, Risma Martiyani, Dewi Liesnoor Setyowati, Erni Suharini. Implementation of the snakes and ladders educational game as a landslide mitigation education media and its effect on student knowledge. *International Journal of Research and Review*. 2024; 11(7): 34-39. DOI: [10.52403/ijrr.20240704](https://doi.org/10.52403/ijrr.20240704)
