

## Research Article

# Learning Material Organization for Disaster Resilient Villages

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**Abstract.**

This study aims to express the best learning material organization for the Disaster Resilient Village Program (Program Desa Tangguh Bencana, DESTANA). It was delivered to the people of Pacitan Regency as a disaster-prone area. Various potential disasters exist in the area of Pacitan Regency. The learning material is organized in line with the revised Bloom's Taxonomy, which applies six levels of thought processes. The learning process starts from a hierarchical structure that identifies lower-level thinking skills to higher levels of skills that are ready for operational implementation. The Lower Order Thinking Skills materials encompass understanding various disaster vulnerabilities based on geographical conditions, the nature of disaster threats and risks, participatory disaster management by the community, principles of evacuation planning, the role of Disaster Management Plans, the paradigm of disaster risk management, principles of the Early Warning System (EWS), the purpose of contingency plans, and principles of first aid in emergencies. The Higher Order Thinking Skills materials include the ability to measure indicators for disaster-resilient villages, establish volunteer working groups, design evacuation stages, develop Disaster Management Plans, Disaster Risk Management, Early Warning Systems (EWS), and Village Contingency Plans. The learning achievement is measured through community understanding and practice, the success of building a disaster response coordination structure, and activities in a disaster simulation. It is organized in seven discussion forums. The program resulted in significant achievements. The Pacitan Regency Government implemented the Disaster Resilient Village Program for the safety of its residents.

**Keywords:** disaster, resilient village, learning material.

## 1. PACITAN REGENCY AND ITS SURROUNDINGS

Pacitan Regency is a transitional zone between the cretaceous and tertiary subduction pathways. The geological structure of Pacitan is the areas of folds, faults, and joints. The Grindulu Fault also stretches across five regions: the Districts of Bandar, Nawangan, Punung, Arjosari, and Donorojo. The depth of the active Grindulu fault reaches the bedrock layer [1].

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Pacitan Area is in a tropical climate with two seasons, dry and rainy. Some characteristics of tropical climates include extreme changes in weather, temperature, and the direction of the wind blows. This is combined with Pacitan's topography, which consists of mountains or steep hills and relatively diverse rocks. About 63% of Pacitan's area is highlands with a more than 40% slope, and the rest is lowlands [2]. It recorded 586,110 people in Pacitan in 2020, in Tulakan District reached 14.32%, and in Pacitan District, it gained 13.34%. Pringkuku subdistrict was at 5.56% [3].

Pacitan Regency is prone to earthquakes, tsunamis, and hydrometeorological disasters such as floods, landslides, forest fires, and droughts. The people of Pacitan Regency need to strengthen their environment with an Early Warning System to respond to disasters. The Resilient Village Program Indicator Document Disaster (2022) mentions that each region's vulnerability to disaster differs due to the varied topographical conditions [2].

This research aims to study the best learning material organization for conveying Disaster-Resilient Village Program materials because Pacitan residents need to know about disasters. Learning must be delivered using methods that are easy to understand and can be implemented. So, it uses the revised Bloom's Taxonomy.

For comparison, the following concerns previous research on public awareness education for dealing with disasters. D. Triana et al. (2015) state that disaster management efforts must be carried out, planned, coordinated, integrated, and comprehensive. Disaster management efforts require the involvement of various related parties and community participation. An educational approach increases community preparedness for disasters [4]. R. Hasan Sari et al. (2016) stated that the people of Simeulue - Aceh appreciate SMONG [5]. This local wisdom is knowledge about tsunami preparedness, a collaborative link between traditional and contemporary preparedness. SMONG is sung in lyrics commonly heard when trying to put children to sleep. SMONG is also cultivated with folklore [6].

## 2. METHOD

The material is discussed in seven sessions, plus one open rehearsal in the field. The material presented refers to the probability of the disasters occurring and the estimated impact on each area. "Open rehearsal in the field," is not included here.

Learning methods for the community are measured based on their suitability with the revised Bloom's taxonomy [7]. Learning starts from a hierarchical structure that identifies lower-level thinking skills to higher levels of skills that are ready for operational

implementation. Lower-order thinking Skills include remembering, understanding, and applying. Higher-order thinking Skills include analyzing, evaluating, and creating.

### 3. RESULT AND DISCUSSION

The program is implemented in Sukoharjo Village, Pacitan District/Regency [2]. The number of participants is 30 people community representatives. The learning model for constructing the Disaster Resilient Village (Desa Tangguh Bencana/ DESTANA) uses the complete discussion method. The steps are for the facilitator/expert to formulate learning objectives and hold discussions between volunteer working groups with the facilitator and the Regional Disaster Management Agency (Badan Penanggulangan Bencana Daerah, BPBD). Next, evaluate the results to expect feedback from the discussion participants and conclude.

TABLE 1: The Material for The First Meeting.

The Materials	The Contents
<b>Topic:</b>	Various disaster vulnerabilities based on the geographic conditions
<b>Lower Order Thinking Skills :</b>	The learner understands the threats of seven potential disasters: The threats are geological disasters, tsunami disasters, hydrometeorological disasters, Biological Disasters, Disaster Threats due to misuse of technology, Environmental Disasters, and Social Conflict.
<b>Higher Order Thinking Skills:</b>	The learner must do the following: Measurement of indicators for disaster-resilient villages

TABLE 2: The Material for The Second Meeting.

The Materials	The Contents
<b>Topic:</b>	Disaster Resilient Village Program.
<b>Lower Order Thinking Skills:</b>	The learner must remember and understand the following material: The disaster threat assessment, disaster risk assessment, and participatory disaster management by the community.
<b>Higher Order Thinking Skills:</b>	The learner must do the following: Build a volunteer working group and elect the Emergency Response Commander. Develop Disaster Resilient Village indicators. Fill out the disaster risk assessment table, including types of disaster threats, threat ratings, and descriptions of threat characteristics.

Based on Table 2., the disaster risk assessment table includes types of disaster threats, threat ratings, and descriptions of threat characteristics. After analyzing and evaluating the disaster vulnerabilities, it can develop the Disaster Resilient Village indicators.

TABLE 3: The Material for The Third Meeting.

The Materials	The Contents
<b>Topic:</b>	The principles of evacuation planning.
<b>Lower Order Thinking Skills:</b>	The learner must understand the following material: The principles of preparing an evacuation plan.
<b>Higher Order Thinking Skills:</b>	The learner must do the following: Preparing design of evacuation routes, Identification of residents in disaster-prone areas, and Identification of capacity for evacuation.

TABLE 4: The Material for The Fourth Meeting.

	Topic, Classification of Order Thinking Skills, and the Materials
<b>Topic:</b>	Strengthening Disaster Management Plan using organizational structure.
<b>Lower Order Thinking Skills:</b>	The learner must understand the following material: The role of Disaster Management Plan. The volunteer forum network and its institutional strengthening.
<b>Higher Order Thinking Skills:</b>	The learner must do the following: Build the Volunteer Forum organizational structure, formulate vision and mission, and principal tasks and functions. Build cooperation program in MoU with local government.

TABLE 5: The Material for The Fifth Meeting.

The Materials	The Contents
<b>Topic:</b>	Disaster Risk Management and the Disaster Management Plan.
<b>Lower Order Thinking Skills:</b>	The learner must understand the following material: The paradigm of disaster risk management and the Disaster Management Plan before, during and after a disaster and identifying all existing disaster threats. Role of disaster management actors.
<b>Higher Order Thinking Skills:</b>	The learner must do the following: Determine disaster risk during the pre-disaster phase, during the disaster and post-disaster and determine the personnel involved. Identify disaster management actors by the volunteer working group.

Refer to Table 5., The volunteer working groups fill out the activity and planning tables. The contents are descriptions of activities per phase/stage of disaster management. Filling begins in the pre-disaster phase (when no disaster occurs, which includes prevention, mitigation plans, and estimating capacity building for evacuees), when a potential disaster is detected, preparedness during emergency response, and post-disaster.

According to experience, early warnings from the authorities often fail to be understood, and the community does not respond. They are slow in taking rescue.

As Higher Order Thinking Skills based on Table 6., the volunteer working group drafted the Early Warning System, which began with filling out the monitoring and

TABLE 6: The Material for The Sixth Meeting.

The Materials	The Contents
<b>Topic:</b>	Early Warning System (EWS)
<b>Lower Order Thinking Skills:</b>	The learner must understand the following material: Basic principles of the Early Warning System (EWS). Knowledge of disaster hazards and risks, monitoring, and early warning services, communication, and disaster response capabilities.
<b>Higher Order Thinking Skills:</b>	The learner must do the following: Carried out the drafting of the Early Warning System (EWS).

warning tables for danger—the table for disseminating hazard warnings and determining quick responses/actions for alerts.

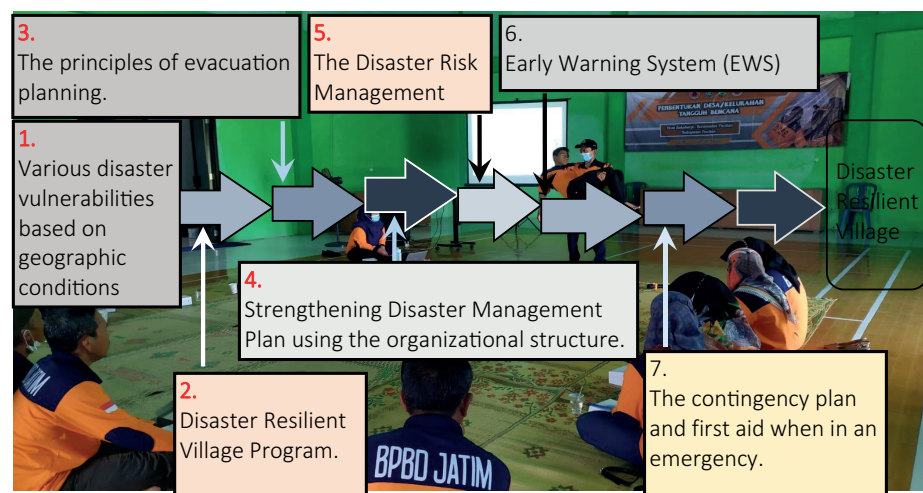


Figure 1: Learning Materials Organization for the Disaster Resilient Village Program.

Contingency plans are intended to advance disaster preparedness. Some of the principles needed in preparing village contingency plans include having a clear rationale, only for one type of threat, being prepared in a participatory manner, based on mutual agreement, must be operational, not causing anxiety, prioritizing local resources, obeyed by all parties, continuously updated, and has humanitarian goals. The preparation of contingency plans begins with preparing scenarios (threat occurrence scenarios and impact scenarios), formulation of policies and strategies, preparation of the structures of emergency response command, preparation of the real struggle operations, and projections of materials required.

Some learning outcomes include forming disaster response working groups, SOPs for disaster management, organizational structures for coordinating disaster management, and maps for evacuation routes. The next discussion is family preparedness during a disaster and post-disaster and preparing a standby bag.

TABLE 7: The Material for The Seventh Meeting.

The Materials	The Contents
<b>Topic :</b>	The contingency plan and First Aid when Emergency.
<b>Lower Order Thinking Skills:</b>	The learner must understand the following material: The meaning, purpose, and basis of the contingency plan. First aid in Emergency Services.
<b>Higher Order Thinking Skills:</b>	The learner must do: Carried out the preparation of contingency plans. Filled out the contingency plan preparation table. Carried out first aid practices in the emergency room Family preparedness when a disaster,& Preparation of a standby bag.

#### 4. CONCLUSION

The learning material organization for constructing the Disaster Resilient Village Program resulted in significant achievements. It is in the form of community understanding of disaster threats, disaster response preparedness, evacuation response, mitigation, and organizational structure of disaster management. As the best, the program has successfully built a disaster response coordination structure and a disaster management plan. Learning materials are organized in seven discussion forums.

#### References

- [1] Y. W. Indrianti, A. Susilo, and H. Gultaf., “Pemodelan Konfigurasi Batuan Dasar dan Struktur Geologi Bawah Permukaan Menggunakan Data Anomali Gravitasi di Daerah Pacitan–Arjosari–Tegalombo, JaTim,” *Brawijaya Phys. Student J.*, vol. 2, no. 1, 2014.
- [2] “Indicator Document Disaster Resilient Village Program,” Regional Disaster Management Agency of East Java Province/ Badan Penanggulangan Bencana Daerah (BPBD) *Provinsi Jawa Timur di Kabupaten Pacitan*, unpublished, 2022.
- [3] P. Primanto and D. Purnawan, “Hasil Sensus Penduduk Biro Pusat Statistik: Jumlah Penduduk Pacitan 586,11 Ribu Jiwa,” *BPS Kabupaten Pacitan*, pacitanku.com, 2020.
- [4] D. Triana, W. O. Widyarto, and Sarwidi, “Manajemen Risiko Bencana Gempa dan Tsunami Berbasis Edukasi bagi Masyarakat di Wilayah Rawan Gempa dan Tsunami,” *J. Dialog Penanggulangan Bencana*. 2015;6(2):91–4.
- [5] R. H. Sari, T. Husin, and Syamsidik, “Kearifan Lokal SMONG Masyarakat Simeulue dalam Kesiapsiagaan Bencana 12 Tahun Pasca Tsunami,” *J. Ilmu Kebencanaan*. 2016;3(1).
- [6] Husin T. *Kapita Selekta Hukum Adat Aceh dan Qanun Wali Nanggroe*. Edisi Revisi. Banda Aceh: Bandar Publishing; 2016.

- [7] G. Thabroni. "Taksonomi Bloom (Revisi) dan Kata Kerja Operasional," serupa.id, 2022.