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RESEARCH ARTICLE

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LINGUISTIC LANDSCAPE OF DISASTER SIGNS IN PADANG CITY, WEST SUMATRA: A MULTIMODAL ANALYSIS

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ABSTRACT
This study aims to analyze disaster warning signs in Padang City, West Sumatra, using a multimodal approach within the framework of linguistic landscape studies. As a disaster-prone area vulnerable to earthquakes and tsunamis, Padang provides a critical context to examine the effectiveness of visual and verbal communication in disaster warning systems. Data were collected through field observations and visual documentation of disaster signs in strategic locations. The findings reveal that these signs combine linguistic elements (monolingual and bilingual), visual components (symbols, colors, images), and strategic placement following national regulations. Symbols such as tsunami waves, tall buildings, and evacuation arrows enhance public understanding. However, the current signage design lacks inclusivity for vulnerable groups such as the elderly and persons with disabilities. Moreover, the integration of local cultural context and indigenous knowledge remains limited. This study emphasizes the importance of a holistic and inclusive approach to disaster signage design,one that not only complies with technical standards but also considers the social, cultural, and psychological dimensions of the community. The findings offer valuable insights for improving disaster communication systems to be more effective and adaptive for multilingual and multicultural societies.

Introduction

Natural disasters are unavoidable, especially in geographic areas such as Padang City, West Sumatra, which is prone to earthquakes, tsunamis, and landslides (BPBD, 2019). Out of the city's one million inhabitants, about 60 percent live or work in areas predicted to be hit by a tsunami. Consequently, disaster preparedness is really important (IKP Diskominfo Kota Padang, 2025). One of the factors contributing to this potential disaster is Padang's location within the megathrust zone along the coast of Sumatra (Damayanti et al., 2020).

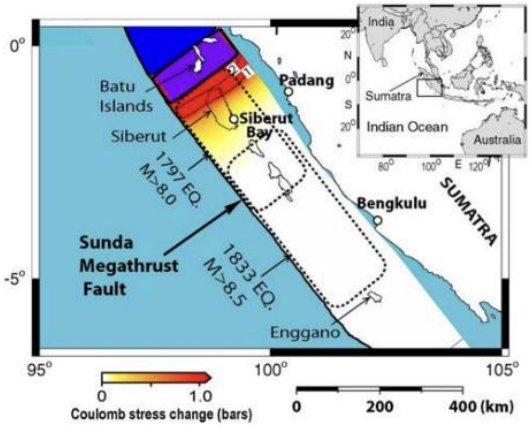

***Figure 1**. Sunda Megathrus at the coast of Sumatra (McCloskey et al., 2007.)*

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In facing of disaster risks, effective communication through disaster warning signs is crucial for conveying information to the public masyarakat (Coombs, 2022; Nazli, 2024; Sulastri, 2023; Xiang, dkk., 2021). These signs function not only as visual media but also as multimodal representations that combine linguistic, symbolic, and visual elements. It ensures messages can be understood quickly and accurately by various community groups. Therefore, it is crucial to conduct research aimed at raising public awareness and ensuring the community understands disaster warning signs to maintain their safety.

This research is vital because it provides insights into how to optimise multimodal elements in signage to ensure disaster messages are clearly conveyed to communities with diverse linguistic and cultural backgrounds. Furthermore, this research is relevant to disaster mitigation efforts grounded in local wisdom and inclusivity. Therefore, an in-depth analysis of disaster signs from a multimodal perspective within the linguistic landscape framework is essential to understand how linguistic, visual, and symbolic elements interact in conveying disaster messages.

Several previous studies have addressed the linguistic aspects of public signs within the linguistic landscape (LL) framework, but most have focused on analyzing text or visuals separately. Landry dan Bourhis (1997) study provided the theoretical basis for defining LL as "the visibility of language in public spaces," including signage (streets, shops, restaurants, offices), directional signs, notice boards, information boards, banners, billboards, and other information media. Recent LL research has expanded this concept by emphasizing the role of LL in shaping identity, language policy, and responses to social issues, including disasters (Benu et al., 2025; Gorter & Cenoz, 2024). However, few studies have integrated a multimodal approach with the linguistic landscape to analyze disaster signs, especially in multilingual and multicultural contexts such as Padang City. In the disaster context, a study in Japan (Tan & Said, 2015) demonstrated that LL is an effective disaster mitigation tool when it combines official language, visual symbols, and local community participation.

On the other hand, language-based disaster communication studies have been conducted, emphasising the importance of using the mother tongue in disaster messages to reach vulnerable groups (Uekusa, 2019; Xiang et al., 2021). Studies have also found that cultural and linguistic incompatibilities in disaster information media can slow the speed of public response (Appleby-Arnold et al., 2018; Uekusa & Matthewman, 2023). However, these studies have not addressed the LL aspect as the primary medium for information dissemination. Other research has also revealed that the lack of standardised disaster terminology in local languages is a significant barrier to risk communication risiko (Caldera & Wirasinghe, 2024; Federici, 2022; Kurnio et al., 2021). Research by Moriyanti, dkk (2019) also showed that students' understanding and background knowledge of tsunami and earthquake symbols and signs remained very low, even though these symbols and signs were displayed in their environment. Other research found that disaster signs in some locations were overly comprehensive and tended to focus on persuasive, instructive messages (Zaim, dkk., 2021).

Multimodal analysis in landscape linguistics research, which combines various modes of communication, such as text, images, colors, and symbols, is key to understanding the complexity of disaster warning signs (Mulyawan, 2020; Oktavianus, 2022). In the context of Padang, West Sumatra, where natural disasters pose a real threat, a deeper understanding of how these signs function and communicate with the community is crucial. Multimodal analysis delves beyond the verbal meanings contained in the texts of these signs to understand how visual and nonverbal elements, such as images, colours, and symbols, contribute to conveying important messages to the community (Hodge & Kress, 1988; Kress & van Leeuwen, 2006). Thus, through this approach, we can understand not only what disaster warning signs communicate, but also how these messages are understood and received by the community.

The purpose of this study is to analyze disaster warning signs in Padang City using a multimodal approach within a linguistic landscape framework. Specifically, this study identifies the linguistic, visual, and symbolic elements used in disaster signs. The novelty of this study lies in integrating a multimodal approach with linguistic landscape analysis to understand how disaster signs function as practical communication tools in a multilingual environment. This study also highlights the importance of adapting disaster sign design to the local context, including the use of regional languages and relevant cultural symbols.

This research contributes to the theoretical development of multimodal and linguistic landscape studies by exploring the interaction among linguistic, visual, and symbolic elements in disaster signs. The findings of this study can enrich the literature on visual communication in disaster contexts and provide a theoretical foundation for future research. Practically, the results of this study can be used by local governments, disaster mitigation agencies, and graphic designers to improve the design of disaster signs. The resulting recommendations are expected to help create signs that are more inclusive, easy to understand, and appropriate to the needs of the multilingual community in Padang City. Furthermore, this research can also serve as a reference for other regions in Indonesia with similar linguistic and cultural characteristics.

Materials and Methods

This research used a qualitative approach to gain a deep understanding of the language used and visual symbols, and to assess the extent to which the messages conveyed can be understood. Qualitative research emphasizes direct observation (*participative observation*), in-depth interviews, and documentation (Creswell & Creswell, 2018). The data collection methods and techniques used were field observation and visual documentation. Field observations were conducted at various strategic locations in Padang City with disaster warning signs, including beaches, hills, and other disaster-prone areas. Careful observation (*exhaustive observation*) in linguistic landscape research aims to comprehensively understand public space signs, which can assist in data collection and analysis (Benu et al., 2023; Sudarmanto et al., 2025).

Meanwhile, visual documentation is carried out by photographing disaster warning signs with a digital camera to obtain complete, detailed visual data. Next, data analysis is carried out using multimodal analysis, in which the collected visual data is examined in depth to identify the verbal and non-verbal elements in the disaster warning signs. This includes analysis of the text, images, colors, and symbols used (Kress & Van Leeuwen, 2001). The results of the study will be interpreted to gain a deeper understanding of the characteristics, elements, and multimodal interactions in disaster signs in the city of Padang.

Results and Discussion

Disaster warning signs are a crucial element in disaster risk mitigation efforts in various regions around the world. Their primary function is to warn the public of potential dangers and provide education on the steps to take in emergencies. In different cities across Indonesia, including Padang, Sumatra, in the West, disaster warning signs are vital given the region's vulnerability to various natural disasters, such as earthquakes, tsunamis, and floods. In this context, multimodal analysis plays a crucial role in understanding how these signs function and communicate with the public. The multimodal analysis in this study highlights the visual communication contained in disaster warning signs. Research data shows that the signs used consist of linguistic, non-linguistic, and a combination of both elements in a single sign. The linguistic sign elements consist of written language in one (*monolingual*) and two languages (*bilingual*). Non-linguistic. What is meant here is the use of various visual elements, such as images, colors, and symbols, to convey messages to the public. Provisions regarding the size, colour, material, and location of signs in Indonesia are set by the National Disaster Management Agency (BPNP). Head RegulationBPNPRepublic of Indonesia 2015 on disaster signs and information boards states that signs for temporary gathering places, refugee camps, post locations, places to make fires, evacuation route directions, refugee camp directions, and guide signs with words.

Figure 2. *Tsunami Hazard Information Board and Tsunami Preparedness Board.*
Source: Author's Documentation 2025

In the context of the linguistic landscape, the two information boards (Figure 1) represent the use of Indonesian as the primary language to convey critical messages related to public safety. Text such as "YOU ARE IN A TSUNAMI-PRONE AREA" and "WHAT TO DO IN THE EVENT OF AN EARTHQUAKE WITH THE POTENTIAL FOR A TSUNAMI" is direct, explicit, and serves as both a warning and an instruction. The language used is instructional, with easily understood command sentences and aims to shape responsive community behavior. The absence of foreign languages, such as English, on this board indicates that the primary target audience is local residents or Indonesian-speaking communities. This can be interpreted as a form of information localization that emphasizes maximum understanding within the local community (Aini et al., 2023; Makasambe et al., 2024; Putra et al., 2024). However, from a landscape linguistics perspective for disaster-prone areas and tourist destinations, this is also an important consideration: the addition of bilingual elements or international symbols is necessary to reach a global audience, particularly in coastal tourism areas (Denil et al., 2024; Nenotek et al., 2025).

From a disaster mitigation perspective, these two boards play a crucial role in the disaster risk communication system. The left board focuses on raising awareness of tsunami-prone areas. It provides basic instructions such as identifying evacuation routes, avoiding the coast after an earthquake, and heading to higher ground. Meanwhile, the right board provides concrete steps in the event of a potentially tsunami-prone earthquake, ranging from spiritual to technical measures, such as avoiding buildings, carrying a disaster preparedness bag, and waiting for official information. These messages reflect a community-based disaster mitigation communication approach, which aims to build community preparedness early on. Thus, these boards serve not only as linguistic artefacts but also as vital tools in disaster risk management, contributing to increased public disaster literacy.

Data such as that in Figure 1 also demonstrate how public space is used to convey linguistic narratives that shape social and cultural behaviour. Language is used to create disaster-aware, educational, and emergency response spaces. By combining text, visual design, and disaster symbols, the linguistic landscape in this tsunami-prone area becomes part of the community's adaptation strategy to the threat of natural disasters.

Language Use

The data show that the language form used in disaster signs is either monolingual (Indonesian) or bilingual (Indonesian and English). No language was found on these signs. The use of monolingualism on these disaster

signs is in accordance with the regulations on the use of Indonesian as stipulated in Law No. 24 of 2009 concerning the National Flag, Language, and Emblem, as well as the National Anthem.
The provincial government of West Sumatra does not yet have regional regulations governing the use of language in public spaces, including the maintenance of local language and literature. The language used on disaster signs in Padang City accommodates all multilingual communities. In addition, because these disaster signs are government signs (*top-down*), they follow national regulations.

Figure 3. *Evacuation Sign From Tsunami Disaster In Bilingual Language*
Source: Author's Documentation 2025

Tsunami evacuation signs, such as those in Figure 2, featuring the bilingual text "EVACUATION ROUTE" and a graphic icon of a person running to higher ground, are a clear example of the interaction between language and public space in the context of landscape linguistics and disaster mitigation communication. In landscape linguistics, signs like these serve as visual artefacts that reflect language policies, communication strategies, and community identities in public spaces. The use of two languages, Indonesian as the national language and English as the global lingua franca, demonstrates the local authorities' inclusive awareness of diverse audiences, including residents and international tourists. This reflects the practice of strategic functional multilingualism to convey safety information in emergency contexts effectively.
Visually, this sign not only conveys textual information, but also relies on universal iconography,a human figure running from a large wave toward a ramp,to reinforce the message. Nonverbal cues are easily understood by all groups, including children, foreigners, and individuals with limited language literacy. In the context of disaster mitigation, this sign serves as a vital communication tool to save lives during a tsunami threat. Its strategic placement in a public space signifies that language serves not only as a social communication tool but also as a lifeline in times of crisis.
Furthermore, this sign symbolises the integration of linguistic and disaster management policies. The presence of English in the sign demonstrates how disaster mitigation policies take into account tourism, global mobility, and linguistic diversity. Thus, the analysis of this evacuation sign broadens the scope of landscape linguistics studies from merely representing language in public spaces to an interdisciplinary approach encompassing safety, spatial governance, and crisis response.

Use of Symbols on Disaster Signs

Data collected through observation show the use of visual signs, both alone and in combination with written language. For example, using symbols of tsunami waves, tall buildings, and climbing roads, or images of evacuation routes, can help people understand the danger threatening them and the steps to take in an emergency. Therefore, multimodal analysis enables us to understand how the interaction among these elements shapes effective messages in disaster warning signs, as shown in Figure 3 below.

Figure 4. *The Use Of Evatcuation Symbols On Tsunami Disaster Signs In Padang City*
Source: Author's Documentation 2025

The sign in Figure 3 shows data on the use of symbols on disaster signs in Padang City. Furthermore, the sign above uses an orange background with the words "Evacuation Directions" accompanied by a potent visual symbol. The symbol depicts a human figure running up a hill or other terrain, while behind it is a large wave symbolising a tsunami. The arrow on the sign indicates the route to follow in an emergency. The orange color of the sign suggests its urgency and importance, in accordance with international standards for warning or evacuation signs. The presence of Indonesian text clarifies the sign's meaning for residents. At the same time, the graphic icons help convey the message to tourists or foreigners who may not speak the local language. These signs are typically placed in coastal areas prone to tsunamis to guide people to designated evacuation points, such as hills, high ground, or vertical structures designated as safe zones. These symbols indicate the importance of readiness and rapid response when an earthquake occurs that has the potential to trigger a tsunami.

There is a significant wave symbol representing a tsunami. The arrow on the sign indicates the route to follow in an emergency. The orange color of the sign suggests its urgency and importance, in accordance with international standards for warning or evacuation signs. The presence of Indonesian text clarifies the sign's meaning for residents. At the same time, graphic icons help convey the message to tourists or foreigners who may not speak the local language. These signs are typically placed in coastal areas prone to tsunamis to guide people to evacuation points, such as hills, high ground, or designated safe zones. These symbols indicate the importance of readiness and rapid response when an earthquake occurs that could trigger a tsunami.

Furthermore, disaster signs were found with a different symbol. The data in Figure 4 shows a tsunami evacuation sign that serves as a guide to a safe place during a tsunami threat. The data in Figure 4 show this sign in orange, with white symbols that are easily recognised visually. It contains images of a tall building, large waves, and a person running up the building, depicting vertical evacuation to higher, safer ground. The arrow on the sign indicates the path to the evacuation location.

Figure 4. *The Use Of Evatcuation Symbols On Tsunami Disaster Signs In Padang City*
Source: Author's Documentation 2025

These signs are typically installed in coastal areas prone to tsunamis, especially near beaches, tourist attractions, or residential areas near the sea. The purpose of these signs is to provide clear and prompt information to the public and tourists so they can immediately move to safety in the event of an earthquake or tsunami warning. The use of universal visual symbols makes these signs effective at conveying safety messages regardless of language barriers. This is also similar to the BPBD logo displayed on*shelter*or temporary evacuation site (TES).

Figure 5. *Tsunami Evacuation Shelter (TES) Padang*
Source: Author's Documentation 2025

For the information, Padang City has built temporary evacuation sites (TES) in the form of multi-story buildings to serve as evacuation sites when a tsunami strikes. Disaster signs, including evacuation routes, are intended to guide in the event of a tsunami. These signs are designed to help the public identify safe directions and gathering points. A temporary evacuation site, as shown in Figure 5, was built in Padang City. designedas a safe place from tsunamis as well as a place to look for family or relatives who are separated when a disaster occurs.

Discussion

A Padang, the capital of West Sumatra, is one of the largest cities on the island of Sumatra. The city is located on the Indo-Australian plate subduction zone, which triggers seismic activity, including earthquakes and potential tsunamis. Furthermore, the geographical and climatic conditions around Padang also increase the threat of flooding and landslides (Widiyantoro et al., 2009; BPBD, 2019). Therefore, the people of Padang live with heightened awareness of the ever-present threat of natural disasters. In this context, the role of the linguistic landscape of natural disaster warnings is crucial. This landscape encompasses a wide variety of languages, symbols, and communication messages used to provide warnings and information to the public.

Linguistic landscape is an approach that combines linguistics with visual and spatial elements in a communication context (Landry & Bourhis, 1997; Sudarmanto et al., 2023). This theory highlights the importance of understanding how text, images, colors, and symbols interact within the communication landscape to convey complex messages to the public.Cultural and linguistic diversity is a distinctive feature of Padang City, as seen in signs in public spaces (Denil et al., 2024). This is crucial for understanding how these signs interact with linguistically and culturally heterogeneous communities. Questions such as whether the language used in early warning systems is understandable to all levels of society, and whether the visual symbols used are clearly understandable to everyone, are key concerns in optimising the effectiveness of warning and communication systems (Hardiyanto & Pulungan, 2019). The use of bilingualism in disaster signs aims to reach a wider audience, including those from abroad (Wulandari & Nurhantoro, 2019).

It is important to note that responding to natural disasters depends not only on the capacity of physical infrastructure but also heavily on the community's ability to understand, accept, and follow instructions provided by authorities during emergencies. One crucial aspect of preparing communities for natural disasters is through adequate early warning and communication systems, such as disaster signs, as identified in this study. This involves using appropriate language and symbols to convey relevant information about potential disasters, the steps to respond, and necessary evacuation instructions.

The placement of disaster-prone zone maps, icons, symbols, and text in public places must be easy to understand (Imani &Wiraseptya, 2022). In the context of disaster mitigation, cultural factors and local context are not taken into consideration in the design and interpretation of disaster warning signs. For example, certain symbols or colors have special meanings in local cultures. Therefore, the local context for disaster management and anticipation can be built and implemented by understanding the public's local culture. This is because every person owns wisdom and local knowledge of everything, including natural phenomena. Research by Pirol & Aswan (2018) found that this local knowledge is no longer sustainable in community life. Currently, only village elders can read and believe in it. Therefore, stakeholders need to make serious efforts to design a disaster-prevention communication system based on local knowledge. Thus, disaster mitigation is not only related to technology and modern infrastructure. Cultural assets such as literature, folktales, and fairy tales are held by the community (Damayanti et al., 2021). Modern societies can learn from their ancestors about local wisdom in disaster mitigation (Kulatunga, 2010; Johnston, 2015; Doroja-Cadiente & Valdez, 2019; Dias et al., 2023). Thus, the combination of modern technology and local wisdom within communities can be a valuable source of knowledge and guidance for building disaster resilience.

Apart from the local aspect, the data collected show that disaster signs, such as those demonstrated through sign linguistics and nonlinguistics (symbols), do not consider people with special needs. These special needs refer to vulnerable populations such as older people and people with disabilities. Developing disaster warning signs specifically for older people is necessary to address the special needs of vulnerable populations in the design of these signs (Krisanti et al., 2023). This underscores the importance of a holistic, inclusive approach

to designing disaster warning signs to ensure everyone is well-informed and can act appropriately in emergencies.

One crucial aspect is understanding how the visual elements of disaster warning signs are perceived and accepted by the public. By understanding more deeply how visual and textual elements interact to convey a message, we can identify the strengths and weaknesses of existing warning signs. This can help authorities and emergency service providers improve the design and placement of disaster warning signs to increase their effectiveness in providing early warning and reducing disaster risk. One of these challenges is the complexity of interpreting visual messages, which are often ambiguous or open to different interpretations, including psychological issues. Paton & Johnston (2001) stated that properly preparing the community will reduce the risk of disaster victims, as they will be psychologically prepared. Understanding disaster warning signs can also be problematic, especially for children. Research results (Moriyanti et al., 2019) revealed that children's understanding of natural disaster symbols remains limited, even though the symbols are installed in their local areas. Therefore, the role of educational institutions and all related parties is essential.

To understand the complexity of disaster warning signs and improve their communication effectiveness, multimodal analysis is a crucial tool. Through this approach, we can delve deeper into how disaster warning signs function and communicate with the public, and identify ways to improve their design and placement to increase public awareness and response to disaster threats.Thus, a multimodal analysis of disaster warning signs in Padang, West Sumatra, not only provides insights into how these signs function and communicate with the public, but also highlights the importance of a holistic approach to designing and understanding them. Through a deeper understanding of the messages conveyed by these signs, authorities can improve the effectiveness and responsiveness of disaster warning signs and strengthen public awareness and preparedness to face the threat of natural disasters that frequently plague Padang, West Sumatra, and surrounding areas.

Conclusions

The This study shows that disaster warning signs in Padang City play a vital role in risk communication and public education regarding the threat of natural disasters such as earthquakes and tsunamis. Multimodal analysis revealed that the signs rely not only on text but also incorporate visual elements, such as symbols, colours, and images, to convey messages more effectively. The use of Indonesian and English reflects an effort to reach local communities and tourists. However, there are still limitations in terms of inclusivity, particularly in considering the needs of vulnerable groups such as people with disabilities and older people, as well as a lack of integration of local values and cultural wisdom in sign design.

Local governments and stakeholders need to evaluate and update the design of disaster signs to meet the needs of multilingual and multicultural communities. Sign designs should consider the principles of universal accessibility and local community participation, integrating relevant cultural symbols and local knowledge. Furthermore, ongoing education through educational institutions and public media is needed to improve the public's visual literacy regarding disaster warning signs.

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