

## A Semantic Analysis of the Language used in Disaster Announcements and Signages in Davao City

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### ABSTRACT

This qualitative corpus-based study aimed to identify the elements in semantic as well as analyze the relationship between an entity and its neighboring non-entity text found in disaster announcements and signages in Davao City. The study utilized social media and public signages as means of collecting data wherein disaster announcements and signages related to flood, fire, and earthquake are being focused. To analyze the data, the researchers used two parts of the process of semantic analysis namely Lexical Semantic Analysis focusing on elements in semantic and Relationship Extraction centralizing on entities and relations. The results exhibit that in those announcements and signages six (6) elements in semantics were commonly found namely Homonyms, Hypernyms, Hyponyms, Polysemy, Synonymy, and Antonymy in which each conveys different lexical meanings that affects the meaning of a sentence. Furthermore, a category of relations was found in the extraction process of the entity and non-entity text which are Description, Causation, Mitigation, Preparedness, and Response. These categories helped explain how each relationship formed with an entity can provide different meaning and different context. All things considered, copywriters of public service announcements for disaster announcements and signages should take note of the word choice and their arrangement and linkage when writing so as to have a better communication and understanding with the citizens to avoid vulnerability with risks.

**Keywords:** *disaster announcement; disaster signage; semantic analysis; semantic element; semantic relationship; semantic entity*

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## INTRODUCTION

In linguistics, the semantic aspect plays a vital role in bridging the gap of understanding from one person to the other. It serves as a medium to express ideas, thoughts, and feelings and spread helpful information. Semantics, a branch of linguistics, focuses on studying the meanings of the language to deliver the correct messages and proper understanding of signs and symbols (Goddard, 2013). In the context of disaster management, language plays a vital role in it since people use language to prepare themselves and aid rescuers in quickly mobilizing when disaster strikes (Bolliger, 2016).

Choosing the right words in announcements and signage is essential to provide accessibility and accurate information. Placing simple and easily interpreted words is what emergency signage should constitute since even people knowledgeable in using a second language, such as English, can experience uncertainty reading signage when disaster transpires (Penny, 2015). As stressed by Uekusa (2019), language barriers in the moment of catastrophe could result in life-and-death situations. It can also affect the livelihood of residents and destroy infrastructures when the essence of the announcements' instruction fails to reach its audience.

Furthermore, semantic analysis, as mentioned by Kanade (2022), is a way of extracting the meaning of a context to recognize and interpret the natural language of an available text. It reveals the relationships of the entities in phrases or sentences to clarify the context of the stitched words in a message. In addition, the natural language is the human language that changes over time. It is more than about the systematic rules of a language; it is more concerned with the arbitrariness of a language. Often, natural language and semantic analysis, as a study, are associated with one another, especially in the field of computer programming. Semantic analysis is utilized by "Natural Language Processing" to extract the meaning and relationships of the natural or human language by registering it as input in a computer. In connection with this, social media and online search engines are one of the mediums that disseminate disaster announcement posts via computer. Hence, copywriters should expect announcements made by them to contain language ideally suitable for disaster-prone residents.

People mainly access information such as current news and details about recent disasters through social media. One of the issues found in the study of Madhubhashini (2018) about the roles of media in managing disaster risks in Sri Lanka is the incomprehensible reports, and the citizens prefer to obtain information through social media as it is more convenient than other traditional media. If information dissemination through social media becomes plagued with incomprehensible reports, those responsible for making relevant and crucial announcements must resolve any ambiguity. Although she did not emphasize in the study that the language used was the reason for the reports' incomprehensibility, it still needs to consider the residents' responses to the said reports.

The semantic analysis of the language of advertisements by Emodi (2011) highlights the different semantic components that connect the makers of advertisements to broader concepts of commercial content (Sukhari & Chanda, 2022). Moreover, countries like Africa, Indonesia, Pakistan, New Zealand, and Sri Lanka have closely related studies in disaster management which include the association of language translation, language diversity, and language inclusivity to disaster management. Despite the availability of the studies mentioned above, the researchers found that there needs to be more local research related to semantic analysis and public service announcements that aim to understand the composition of the texts for warning, evacuation, and information purposes of disasters.

This study significantly impacts the copywriters within Davao City since this research seeks to analyze the language from the disseminated textual information about calamities throughout Davao City. Analysis of language used in disaster management is vital since selecting poor lexical terms can disrupt communication, resulting in misinformation that will likely endanger lives. Moreover, this study is also pertinent to the readers or audiences since they are the consumers of the advisories created by the copywriters. This research purposely addresses the possible unsatisfactory experiences of readers toward public announcements that they need help to grasp due to the meaning of the words and text conveyed.

Disasters significantly affect many lives over time, with 421 disasters recorded in different countries across the globe last 2022 (Salas, 2023). Thus, announcements and signages from every place are necessary to direct and guide people. Like Philippines, efficient advisories are vital since it is one of the most vulnerable countries to experience typhoons and other disasters (Jha et al., 2018). In the local setting, flash floods, fires, and earthquakes are commonly experienced in Davao City, so the residents must have access to appropriate and accessible warnings or announcements. However, the means of communicating with people and trying to keep them safe will only serve its function if the information is subject to clarity (Cutler, 2021).

Language mainly functions as a communication tool, and in these recent years, language features, meanings, and concepts continue to expand. According to (Emodi, 2011), in his semantic analysis study of the language of advertising, finding the right combination of words and being aware of how to manipulate and arrange various terms that suit one's goal to persuade, inform, and communicate. These objectives contribute to the audience's understanding of the text's meaning. Furthermore, in his study, the problem revolves around using ambiguity in advertisements and posters. Then, Emodi (2011) explained that the advertisers should use ambiguity effectively to evoke the correct context of the commercial.

Consequently, semantic standards in the field of advertisement slogans create an effect that captures the consumer's attention while retaining the product information in their memory. It enables businesses and services to have better marketing strategies generating positive results and higher profits (Heriyawati & Febriyanti, 2019). Bearing the idea in mind, the researchers observed that copywriters for disaster-related announcements should apply the same principle to the language of disaster announcements and signages to grab the attention of residents prone to floods, landslides, fires, earthquakes, and the like. Although the present available signages and warnings may manifest the struggle of evoking public urgency and preparedness; the language use, unfamiliarity of words, and ambiguity are the foreseeable reasons the researchers perceived to explore and analyze the topic.

Moreover, aside from analyzing data from disaster-related announcement posts via social media, the researchers also include the linguistic landscape installed around Davao City. The linguistic landscape covers physical signages because it refers to studying the written language on public displays (Gaho & Sari, 2022). Through this, it identified the emphasized lexical terms written in disaster signages that inform people

that certain places are vulnerable to disasters and hazards of land faults. Having a “common language” for disaster preparedness may elicit cooperation and achieve the same understanding of the goals of disaster announcements and warnings with the readers (Bose, 2021).

Diving into the aspect of Natural Language Processing in connection to semantic analysis, it extracts the meaning of human language in an uploaded text in computers so that the computer system will recognize the accurate message (Madala, 2023). The loaded lexical terms of a disaster announcement in the computer will be categorized depending on their relationship and lexical meanings. So, it is essential to note that any word uploaded by copywriters will affect the filtration of key terms in social media since search engines use semantic analysis (Kanade, 2022).

When residents search for information on Facebook and similar platforms, the media's system will specifically show online posts about disasters in Davao City. It will avoid giving the residents irrelevant information, especially during emergencies, because as cited by Young et al. (2020), social media allows people to seek timely information. Hence, semantic analysis for this context is helpful for copywriters to construct more accurate posts that will meet the required information by social media users.

Semantic analysis can recognize entities within Natural Language Processing because of its distinctive trait. Karatas (2022) sorted these entities into categories such as names, locations, dates and years, clock time, mobile numbers, and the like. A phrase creates meaning that connects these entities. Individually, these entities have their distinct lexical meanings. Nonetheless, once placed within the same sentences, their senses can coordinate to reflect the complete intention of the text.

The semantic theory is the primary foundation of this study. This theory is among the numerous perspectives under the Theory of Meanings. The semantic theory asserts that semantics is the understanding of the expressions behind the words and their relationship to other words in the sentence (Speaks, 2019). As a result, this study falls under methodology as the paper's research paradigm because it seeks to answer several methodological questions that will reveal how the semantics of public announcements should be analyzed (Rehman & Alharti, 2016).

Considering all factors, the researchers felt motivated to conduct a local study that centers on analyzing the language used in disaster announcements and signages at a semantic level. With this, the study focused on Davao City's linguistic landscapes and disaster-related posts from social media. Still, researchers only studied the announcements that used English as the language of communication. Thus, the study did not involve posts addressed to Davao City residents but utilized vernacular language. The researchers also limited the term "disaster" to floods, earthquakes, droughts, and fire throughout the research since these are the commonly experienced calamities in Davao City. The group did not tap the online posts about the effects of disasters, such as the spread of diseases.

Generally, this study aimed to analyze the semantic features of the language used in disaster announcements and signages in Davao City, Philippines. Specifically, it

sought to determine the linguistics elements of semantics used by copywriters of public service announcements to influence their audience and to determine the semantic relationships of the entities in Davao City's disaster announcements and signages.

## METHOD

The method explains in detail how the research was carried out. The type of research used will determine the method used in the study. The method in the quantitative approach contains a description of the identification of variables; population, sample, and sampling techniques; data collection methods and tools; instrument validation; and data analysis methods.

Furthermore, the method in a qualitative approach includes several related matters: an explanation of the form of the qualitative approach taken; research participants; data collection methods and tools; validation and transferability; and data analysis methods. The method is written descriptively in the form of paragraphs without accompanied by numbering or bullet.

## FINDINGS AND DISCUSSION

In this section, the identification of linguistic elements of semantics used by copywriters of public service announcements to influence their audience and the identification of semantic relationships of the entities in Davao City's disaster announcements and signages are presented. The discussion of the findings then follows contextualization with existing literatures.

### Linguistic Elements of Semantics in Disaster Announcements and Signages

Among the gathered announcement posts and signages related to the hazards of disasters, the copywriters used the listed elements of semantic analysis below to influence the Davao City residents regarding disaster preparedness. These elements are *homonymy*, *hypernymy*, *polysemy*, *hyponymy*, *synonymy*, and *antonymy*. Each of these elements shows lexical meanings that help words present the meanings of sentences (Rafida, 2018).

**Table 1. Linguistic Elements of Semantics in Disaster Announcements and Signages**

Linguistic Element	Sample Texts
	Sirens sounded in Matina Pangi.
Homonymy	Due to the water level increase of Davao River along Brgy. Tamugan river channels is now monitored on Code <b>Orange</b> (warning level) and increasing, BDRRMC's and volunteer groups along Davao River channels are advised to preposition resources, closely monitor all flood-prone areas, and alert the communities living near the river channels.
Hypernymy	Do not go swimming or boating in <b>swollen</b> rivers. Hazards affecting <b>land areas</b> in the next 24 hours, the shear line will bring moderate to heavy rains, with at times, intense rains over Eastern Visayas, Bohol, Caraga, Northern Mindanao, and Davao Oriental.

	Do not keep <b>flammable materials</b> like gasoline, kerosene, and paint inside the house.
	Customers in Tugbok, Talomo, Puan, Ulas, Bangkal, and Matina are currently experiencing a power interruption due to the reported flooding in the said <b>areas</b> brought about by the heavy rain.
	Do not attempt to cross <b>rivers or flowing streams</b> with waters that are above the knee or where current is strong.
<b>Hyponymy</b>	<b>Typhoons and heavy rainfalls</b> may lead to severe damage, particularly flooding.
	This fire prevention month, let us all be mindful and cautious on everything that may cause fire at <b>home</b> or in the <b>workplace</b> .
	Due to localized thunderstorms, areas of Davao City are experiencing weather <b>disturbances</b> with moderate to heavy rains.
<b>Polysemy</b>	People are advised to stay away from the beach and to not to go the <b>coast</b> fronting Philippine Sea of the following provinces during this 12:00 pm to 2:00 pm and, until the threat has passed.
	Increase <b>consciousness</b> on fire safety. We are approaching a fire-prone period.
	This fire prevention month, let us all be <b>mindful and cautious</b> on everything that may cause fire at home or in the workplace.
<b>Synonymy</b>	Cooking is the leading cause of home fires and fire injuries. <b>Ranges or cooktops</b> cause 62% of home fires.
	It is essential to <b>develop and improve</b> knowledge in flood risk management.
	Flood is the rising of water level until it overflows its <b>natural or artificial</b> confines and submerges the surrounding (surrounding) area.
<b>Antonymy</b>	Minor sea level disturbances such as strong currents and rapid <b>rise and fall</b> of sea waters are expected.
	Classes from kindergarten to post-graduate studies in <b>public and private</b> educational institutions will resume on Tuesday, November 5.

## Homonymy

Homonyms characterize the same sounds and spellings but differ significantly in meanings (Abu-Humeid & Altai, 2010). Due to the multiplicity of meanings, one way to decode what homonyms pertain to is to read and understand the whole text. As cited by Mamedova (2019), classified homonyms through their lexical and grammatical meanings. For instance, 'match' may refer to a game between competing teams,' but it can also pertain to 'a stick used to produce a flame' or 'an action equating something to its counterpart.' Below are the sample texts showing examples of homonyms in the gathered posts and signages.

HOM1 Sirens sounded in Matina Pangi.

HOM2 Due to the water level increase of Davao River along Brgy. Tamugan river channels is now monitored on Code Orange (warning level) and increasing, BDRRMC's and volunteer groups along Davao river channels are advised to preposition resources, closely monitor all flood-prone areas and alert the communities living near the river channels.

HOM3 Do not go swimming or boating in swollen rivers.

In HOM1, 'sirens' is considered a homonym since readers can misunderstand it as a mythical creature. However, contextually, 'sirens' was meant as an instrument that produces warning sounds. As written by Palicte (2020) in one of the articles of the Philippine News Agency, sirens were installed in Davao City to serve as an alarm for impending dangers of floods, storms, or landslides. For HOM2, the determined homonym is 'Orange.' Technically, it means a mixture of two colors: yellow and red, or citrus fruit. However, according to the context of the announcement post, it is a code and a sign that the water has reached the warning level, and vulnerable residents must be cautious of the possible flood and consider evacuating. As practiced by Davao's CDRMO, code orange always meant the need to conduct pre-emptive evacuation. Within HOM3, 'swollen' is the spotted homonym. Residents of Davao City may need clarification on a swollen river, as it is rare to mention such a term in the area. They can assume it is a bloated river because of the word 'swollen.' Nevertheless, if it is defined accurately, it describes a river composed of more water than the usual river because of heavy rains.

As shown above, different homonyms are identified in various disaster posts and signages that may influence the readers' perception and comprehension of the announcements. The words sirens, orange, and swollen have more than one definition. One can only decode the actual senses of these homonyms once the text is read wholly. If one fails to do so, ambiguity may arise as the distinction of words with numerous meanings is one of the remaining issues regarding homonyms (Kaljanov, 2021). Hence, copywriters and content creators about disasters must consider the clarity of text structure in composing announcements and warnings to avoid conflicts with the readers' interpretations, specifically the non-native English speakers of Davao City.

## Hypernymy

Hypernymy came from the Greeks, which translates to combining extra and name. In linguistics, hypernym is considered the general term, which is why they are also called superordinate or supertypes (Nordquist, 2019). In addition, they are the words that cover the more distinct terms. Hence, they have broader meanings and identifications since they encompass more types of terminologies. As stated by Parmar and Narayan (2022) in their study related to hypernym, hypernym is essential in the human language as it generalizes specific terms. Through this, it classifies the words into their designated categories of words.

HPR1 Hazards affecting land areas in the next 24 hours, the shear line will bring moderate to heavy rains, with at times, intense rains over Eastern Visayas, Bohol, Caraga, Northern Mindanao, and Davao Oriental.

HPR2 Customers in Tugbok, Talomo, Puan, Ulas, Bangkal, and Matina are currently experiencing a power interruption due to the reported flooding in the said areas brought about by the heavy rain.

HPR3 Do not keep flammable materials like gasoline, kerosene, and paint inside the house.

The sample texts contain the hypernym ‘areas,’ which served as the general term for the indicated places prone to flooding. The ‘areas’ in HPR1 represent Eastern Visayas, Bohol, Caraga, Northern Mindanao, and Davao Oriental. Meanwhile, the HPR2 covers the specific locations: Tugbok, Talomo, Puan, Ulas, Bangkal, and Matina. In HPR3, the term ‘flammable materials’ refers to gasoline, kerosene, and paint. These objects consist of different chemicals, but they all fall under the ‘flammable materials’ category that exposes people to hazards if not stored properly.

Using hypernym in these posts helps avoid redundancy of places that would make the announcements appear longer. Announcements must be kept brief and straightforward (Nurmagomedov, 2021); the hypernym allows copywriters to input lesser but purposeful words in the posts. Also, categorizing terms (hypernym) enables readers to identify where such words (e.g., Tugbok, Talomo, kerosene, gasoline) belong in the context of the posts. However, as averred by Cao (2022), it is still important to note that hypernyms should be written together with their hyponyms to create a clear writing piece.

### Hyponymy

The subordinate term of hypernymy is hyponymy. Hyponymy is the individual classifications from a generalized class (Dewi, 2021). This term came from the etymology, *hypo* which means ‘below’ added to the *nym* which denotes ‘name.’ Hence, it is a specified entity from a broader term. Moreover, hyponyms have multiple layers wherein specific terms can be more established, placing the former word at the higher level of the hyponym’s hierarchical relationships (Nordquist, 2019). For instance, ‘fish’ is a hyponym of ‘animal’, but sharks, clownfish, salmon, etc. are hyponyms of ‘fish.’ Moreover, in the field of disaster announcements, below are the samples that include hyponymy throughout the safety advisories within Davao City.

HYP01 Do not attempt to cross rivers or flowing streams with waters that are above the knee or where current is strong.

HYP02 Typhoons and heavy rainfalls may lead to severe damage, particularly flooding.

HYP03 This fire prevention month, let us all be mindful and cautious on everything that may cause fire at home or in the workplace.

The hyponyms ‘rivers’ and ‘flowing streams’ in HYP01 fall under the hypernym bodies of water since rivers and flowing streams illustrate flowing waters in certain areas. In addition, the second text in HYP02 is composed of the hyponyms ‘typhoons’ and ‘heavy rainfalls,’ which are types of natural calamities that bring severe rain showers and cause damage to the affected locations. Alongside the first two samples, the HYP03 has ‘home’ and ‘workplace’ as the hyponyms of ‘buildings.’ It means that a concept of structure with roofs and walls that people occupy symbolizes both terms.



According to Cao (2022), a hyponym is relevant to reading comprehension because it makes a text more cohesive and adds vividness to the readers' thoughts. The specification narrows the ideas to more particular entities like 'home' and 'workplace.' Readers can think of these concepts directly rather than other establishments or buildings. Hence, this element provides accuracy and concreteness to its target audiences.

### **Polysemy**

As cited in the study of Lopukhina et al. (2018), polysemy describes words with numerous closely related meanings. Polysemous words have multiple representations, and as stated in the paper of Lee (2021), these representations or meanings belong to the same group of denotations. Homonymy and polysemy may share nearly the same definitions. However, the main distinction between these elements is that homonyms give various distant senses, while polysemy is words that share a common feature among word meanings (Thanaki, 2017).

POL1 Due to localized thunderstorms, areas of Davao City are experiencing weather disturbances with moderate to heavy rains.

POL2 People are advised to stay away from the beach and to not go the coast fronting Philippine Sea of the following provinces during this 12:00 PM to 2:00 PM and, until the threat has passed.

POL3 Increase consciousness on fire safety. We are approaching a fire-prone period.

In POL1, 'disturbances' was connected to the weather, which can be interpreted that weather 'disturbances' are natural events interrupting the fair climate. It shows that it is still related to the definition of 'disturbances' interrupting a momentum of calmness or peace. Moreover, 'coast' in POL2 refers to a border of land near the sea. It is similar to the standard description of the coast, a land that meets the sea. Also, the term 'consciousness' in the third sample text signifies the awareness and mindfulness of the residents about improving their knowledge about fire safety. When searched through the dictionary, the 'consciousness' also shares a similar meaning from the context of the third text, which is awareness and responsiveness.

Polysemous words may have numerous meanings, but they are beneficial to bring out the correct sense of a context since they are all connected to a specific thought. The identified polysemous words from the sample texts may have different usage. Nonetheless, readers can still decipher the whole meaning of the posts because of their nominative meaning (the direct relations of words). Words with related meanings will aid the use of a language in communicating since the context will ensure accurate meanings (Ruzimurod, 2022).

### **Synonymy**

Synonymy are said to be words having similar meaning. Nonetheless, as Murphy (2018) explained, synonymous words can substitute for one another. Their

replacements would not affect the implication of the texts or sentences, even writers swapped the words. Some terms may appear synonymous. However, when replaced with the other words, they are unsuitable for the idea that a sentence is trying to project. With this, the said words cannot be considered synonyms.

SYN1 This fire prevention month, let us all be mindful and cautious on everything that may cause fire at home or in the workplace.

SYN2 Cooking is the leading cause of home fires and fire injuries. Ranges or cooktops cause 62% of home fires.

SYN3 It is essential to develop and improve knowledge in flood risk management.

'Mindful' and 'cautious' are synonymous terms found in SYN1. The concept of the said post reminds the people of Davao City to attend to the things in their homes that may start unintentional fires. With this, 'mindful' and 'cautious' can substitute each word, and the post's sense will not be changed (reminding people to be careful to prevent house fires). The 'ranges' and 'cooktops' in SYN2 both characterized similar meanings; kinds of kitchen equipment that produce heat and an item used for cooking. Lastly, in SYN3, the identified synonyms are 'injuries' and 'damage,' which both meant the possible hazardous effects of the recent earthquake. Along with former elements, synonymy is also linked to issues of ambiguity (Rashidova, 2021). Writers may exploit a group of words having related meanings by replacing the right words with verbose or weaker terms. Thus, copywriters should observe the use of good synonymous words to compose an announcement that conveys only a single idea to its intended readers.

### **Antonymy**

As opposed to synonymy, antonymy is the words contradicting one another to show comparison and emphasis (Ellis, 2022). Although antonyms counter each definition, these words must still be commonly associated with one another to determine their differences. For instance, the juxtaposition of the adjectives 'strong' and 'weak' can easily be distinguished since they are related in oppositeness in a lexical sense.

ANT1 Flood is the rising of water level until it overflows its natural or artificial confines and submerges the surrounding (*surrounding*) area.

ANT2 Minor sea level disturbances such as strong currents and rapid rise and fall of seawater are expected.

ANT3 Classes from kindergarten to post-graduate studies in public and private educational institutions will resume on Tuesday, November 5.

The ANT1 has the antonyms 'natural' and 'artificial' to describe the 'confines.' As the audience reads these antonyms, they may instantly think of the natural borders of the water and the manufactured confines that separate the land from bodies of water.

In ANT2, the antonyms ‘rise’ and ‘fall’ describe the movement of the water. Although they are entirely different in direction, readers can clearly visualize the sea's current that results from sea level disturbances. Lastly, the ANT3 post uses the difference between 'public' and 'private' to become more precise in determining which educational institutions must suspend classes.

The opposite pairing of words, such as natural and artificial, rise and fall, and public and private, enhance the informative structure of the announcement. Gjergo and Delija (2014) concluded that antonyms are relevant to everyday communication as people use them as a new mode of creating messages or information. Therefore, this element contributes to more precise daily information dissemination, especially during unexpected disasters.

**Semantic Relationship of Entities in Disaster Announcements and Signages**

In linguistics and natural language processing, semantic relationship refers to the association and connection between various words or concepts based on their meaning (Chakraborty, 2019). It seeks to extract meaningful information from a text by understanding the context and meaning of the words and phrases used. Knowing the semantic relations of entities to a phrase or sentence and vice versa from disaster risk reduction and management announcements is crucial because it helps in understanding the key information of a text. Moreover, when scrutinizing the language employed in disaster announcements deeper understanding of the intended message and emotions occur.

These relationships help convey important information about the disaster, including the type and severity of disaster, its location, resources required for relief efforts, and any actions people should take to stay safe. In the context of disaster response, entity relationship extraction becomes important as it is used to possibly identify the most affected areas and prioritize relief efforts accordingly. All in all, semantic analysis and relationship extraction provide important contextual information that can aid in the interpretation of text data. The tables and samples below show the extraction results used to determine each text's semantic relationship.

**Table 2. Semantic Relationship of Entities in Disaster Announcements and Signages**

Semantic Relation	Sample Texts
	People <b>living near the mountain slopes and in the low-lying areas of the above-mentioned river systems and the</b> local disaster risk reduction and management councils are advised to take necessary precautionary measures.
Description	It's around 15 to 20 minutes <b>to shoot and upload a video, it will only take less than 2-3 minutes to burn a house or structure, but it is only 10 seconds to call 911.</b>
	Flood <b>is the rising of water level until it overflows its</b> natural or artificial confines <b>and submerges the</b> sorrounding [surrounding] area.

	Customers in Tugbok, Talomo, Puan, Ulas, Bangkal, and Matina are currently experiencing a power interruption <b>due to the reported flooding in the said areas brought about by the heavy rain.</b>
<b>Causation</b>	<p><b>Due to localized thunderstorms, areas of</b> Davao City are experiencing weather disturbances with moderate to heavy rains.</p> <p>Cooking <b>is the leading cause of</b> home fires and fire injuries. Ranges or cooktops <b>cause</b> 62% of home fires.</p>
	<b>Create a disaster preparedness plan.</b>
<b>Mitigation</b>	<p><b>Do not attempt to cross</b> rivers or flowing streams with water that are above the knee or where current is strong.</p> <p>While confirming the details of the recent Earthquake, CDRRMO-OPCEN is advising all BDRRMCs, volunteer groups, and response clusters <b>to check for any possible damage caused by the ground shaking.</b></p>
	All Barangay Disaster Risk Reduction and Management Committee and volunteers <b>are advised to preposition resources, and to continue closely monitor areas that are prone to</b> floods, street floods, and landslides.
<b>Preparedness</b>	<p>We are encouraging everyone to join the First Quarter Nationwide Simultaneous Earthquake Drill (NSED) today at exactly 9AM, March 10, 2022, <b>whether you are at home or at your workplace, perform Drop (Duck), Cover, and Hold for 60 seconds to simulate the onset of the strong ground shaking.</b></p> <p><b>Familiarize yourself with the</b> emergency exits <b>in your residence or work place.</b></p>
	Due to the water level increase of Davao River along Brgy. Tamugan river channels <b>is now monitored on Code Orange (warning level) and increasing</b> , BDRRMC's and volunteer groups along Davao river channels <b>are advised to preposition resources, closely monitor all flood-prone areas and alert the communities living near the river channels.</b>
<b>Response</b>	<p>As of 10:11 pm tonight, CDRRMO-OPCEN <b>had advised all barangays along</b> Davao river <b>to trigger their early warning sirens and to conduct force evacuation within their flood and landslide prone area due to the increasing water level status of</b> Davao River.</p> <p>Tacunan Barangay-based disaster response volunteers <b>reported the overflow of</b> Sierra Madre.</p>

## Description

To describe is to tell the details of something clearly and concisely. It is a form of representing or explaining a thing, a person, a concept, or an action through oral or written means. According to the Federal Emergency Management Agency (2014), the content of a message must be straightforward, use simple language, and include information such as specific hazards, locations, timeframes, concerned people, and many more for it to be accessible. Effectively delivering an emergency detail requires Public Service Announcement writers to create connections using descriptions that

explain the reasoning behind the announcement (Ward, 2015). Hence, this helps to make a point, show perspective, and elicit emotion or action.

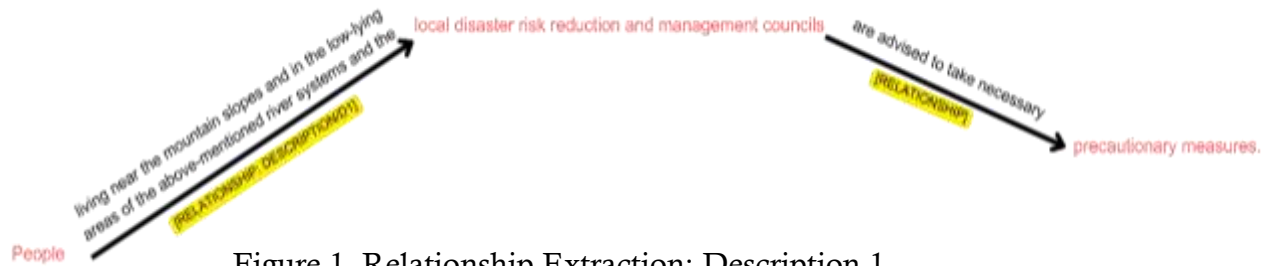


Figure 1. Relationship Extraction: Description 1

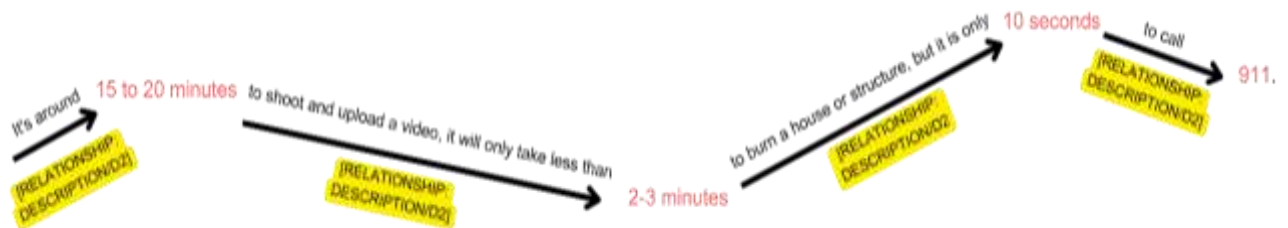


Figure 2. Relationship Extraction: Description 2



Figure 3. Relationship Extraction: Description 3

In the first sample text, D1, 'living near the mountain slopes and in the low-lying areas of the above-mentioned river systems and the' describes what type of entity is given priority in the announcement. It emphasizes the concerned people living in certain areas and calls out responsible authorities to be alert and prepared if the situation worsens. On the other hand, the phrases 'It's around,' 'to shoot and upload a video, it will only take less than,' 'to burn a house or structure, but it is only,' and 'to call' in D2 accentuates the relationship it has with the numerical entities. It gives the entities more meaning by describing the specific details for the announcement to be informative to the public. It emphasizes that it takes particular timeframes for how fire can spread and how quickly it is to dial for help. On a final note, the D3 phrases 'is the rising of water level until it overflows its' and 'and submerge the surrounding [surrounding] area.' creates a relationship with the entities 'Flood' and 'natural or artificial confines' by describing its definition and what it does. It further explains the danger a flood may bring. Through the relationship that the D3 phrase has formed with the entities, it will inform the public about the indicators if there is a flood, hence making the people alert by making them aware of its surrounding area.

### Causation

Causation is the capacity to understand how a variable can influence the incidence or existence of another. Galley (2020) asserts that to provide a solution for a

problem, avoid unwanted issues, or know the reason behind a situation; one must understand the root cause. In DRRM, identifying, assessing, and understanding the cause of a particular event or incident is necessary to create preventive measures and disseminate information to the public (UNDRR, 2015). Moreover, knowing the cause also means knowing the purpose. The DRRM's communications team has the job of curating announcements that represent and explain the emergency to lessen ambiguity in information and the vulnerability of people to any disaster risks (National Research Council, 1999). Ergo, this will enlighten the citizens in the area as to why such situations are happening, making them well-informed.



Figure 4. Relationship Extraction: Causation 1



Figure 5. Relationship Extraction: Causation 2



Figure 6. Relationship Extraction: Causation 3

The notion of causation is apparent in C1 because it explains why the entity “Customer” is experiencing a power interruption, which is ‘due to the reported flooding’. The C1 additionally illustrates a double effect in the causality because the reported flooding is ‘brought about by the heavy rain’. The second sample text, ‘Due to localized thunderstorms’, is why the entity “Davao City” areas are experiencing weather disturbances. The relationship built by the entity with the cause of the problem makes the announcement clear and concise to the reader. Lastly, the C3 sample text leans more on informing the public about what entity usually ignites fire or fire injuries. It subsequently emphasizes and describes how the entity cooking, ranges, and cooktops cause fire by stating its percentage. Therefore, producing an announcement that offers information that advocates fire prevention.

## Mitigation

Tay et al. (2022) defined that mitigation refers to actions or strategies to reduce the severity of a disaster's impact on people, properties, animals, and livelihood. It

involves planning and modifying policies, regulations, techniques, and procedures that help to protect and prevent anyone or anything from being vulnerable to danger. Disaster mitigation in public service announcements is fundamental in local government unit's risk reduction efforts as it aims to inform its constituents about the plans and procedures that are prepared not only for the DRRM team to mobilize but also for the citizens Disaster Mitigation – Emergency Management City of New Bedford (2013). Thus, making explicit connections and directions is necessary to know what to do and prepare for emergencies.

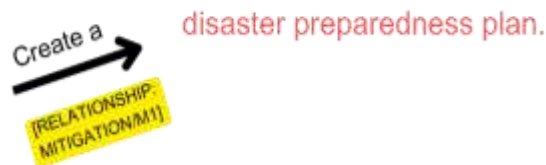


Figure 7. Relationship Extraction: Mitigation 1

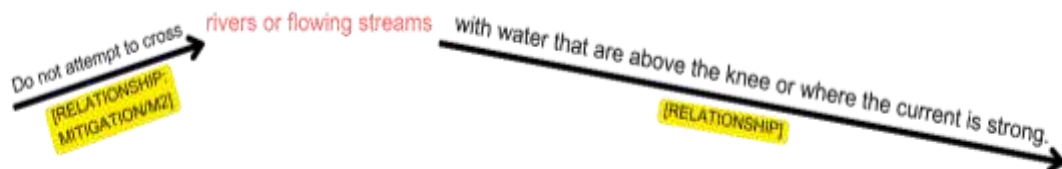


Figure 8. Relationship Extraction: Mitigation 2



Figure 9. Relationship Extraction: Mitigation 3

The data in Figure 7, which is M1, evoke the action of mitigation through instruction for the entity. The relationship between the entity (disaster preparedness plan) and the word creates forms a meaning that tells the DRRM team of the LGU and citizens to develop plans of their own that can protect and prevent them from risk or hazards; for instance: fire, earthquake, and flood. It appeals to encourage people to be proactive in making plans to mitigate the effect of disasters. Subsequently, the M2 phrase 'Do not attempt to cross' warns the people about the dangers of the strong current of rivers. The phrase combined with the entity serves as an announcement that provides prevention through warning and protects people from the possible danger of drowning or death. Additionally, the last sample text from the table illustrates how DRRM heads, or in this case, the entity CDRRMO-OPCEN are mitigating the situation to its constituents. This phrase 'to check for any possible damage caused by the ground shaking' from M3 implies that authorities are on the ground investigating possible dangers brought by the earthquake. In announcements, it is crucial to state

and inform the public that authorities are deployed and are mitigating their investigation process to avoid chaos from panicking and calm the people down. Ergo, mitigating to ensure public safety.

## Preparedness

The state of being ready for anything is preparedness. (Khairina et al., 2022) defined disaster preparedness as a way that lessens the effect of disaster. With this, disaster management offices and groups utilize public announcements to encourage people to prepare against the worst impacts of emergencies. They guide readers by including in the announcements the tips and actions that possible affected residents must do before, during, and after calamities.



Figure 10. Relationship Extraction: Preparedness 1

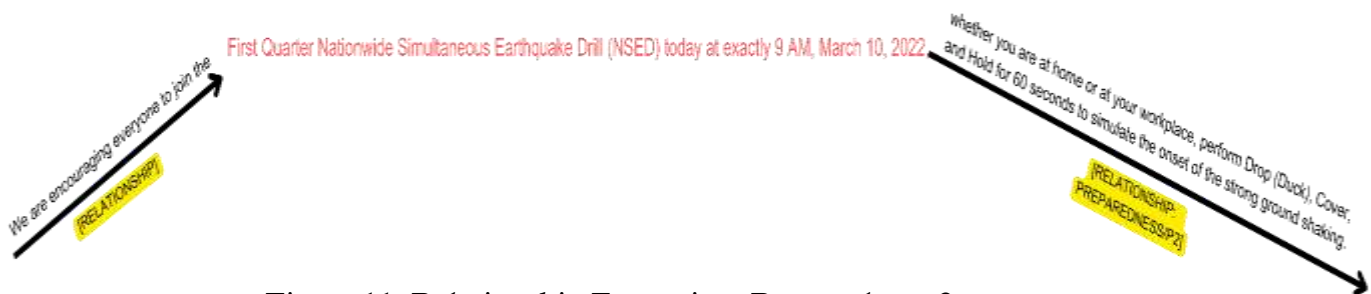


Figure 11. Relationship Extraction: Preparedness 2

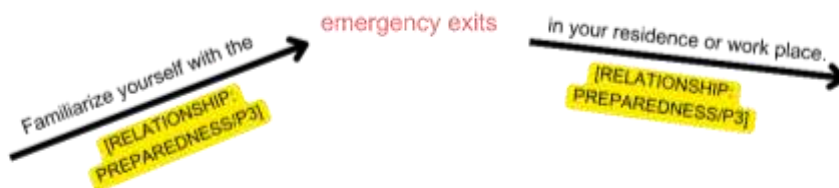


Figure 12. Relationship Extraction: Preparedness 3

The phrase 'are advised to preposition resources, and to continue closely monitor areas that are prone to' in P1 conveys preparedness as it instructs the entities, Barangay Disaster Risk Reduction and Management Committee, and volunteers to preposition. It means that by primarily situating the resources in withstanding the possible disaster, they can be ready to do their duties as rescuers. Furthermore, in P2, the clause 'whether you are at home or at your workplace, perform Drop (Duck), Cover, and Hold for 60 seconds to simulate the onset of the strong ground shaking' indicates preparedness



since it reminds the entity, everyone, to do these actions when they experience an earthquake. Finally, P3's phrase 'Familiarize yourself with the' is a tip to know beforehand where 'yourself,' as the entity, must exit during disasters. It also relates to the second phrase [P3], 'in your residence or workplace,' adding more information on where the entity should familiarize itself with the emergency exit.

## Response

In disaster management, a response is a reaction to people's call for rescue and their primary needs after a calamity passes away (Young et al., 2020). For affected residents, the response from authorities and rescuers is immensely vital since they are the expected group of people who have the means to save citizens from the effects of disasters. The responses are often reflected in Public Announcements, enabling the authorities to inform the residents how they act if these situations occur.



Figure 13. Relationship Extraction: Response 1

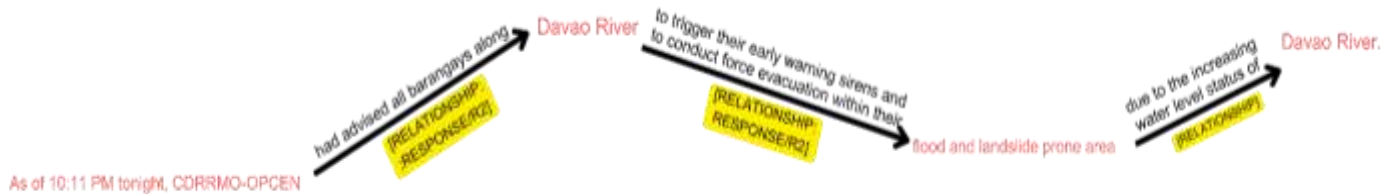


Figure 14. Relationship Extraction: Response 2

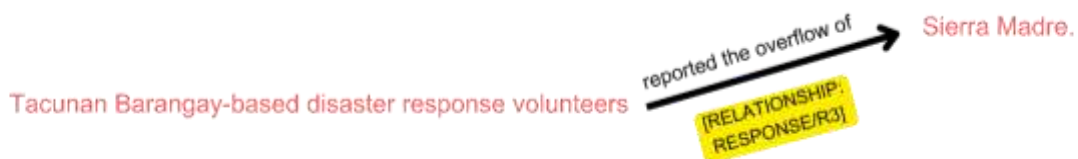


Figure 15. Relationship Extraction: Response 3

As marked in the first sample text, the R1 'is now monitored on Code Orange (warning level) and increasing' portrays response to the escalating water level of Davao River in Barangay Tamugan. This phrase depicts the relationship of the entity 'Davao River' towards the entity 'Code Orange' through the response 'is now monitored'. Furthermore, the second phrase in R1, 'are advised to preposition resources, closely monitor all flood-prone areas and alert the communities living near the river channels,' emphasizes the response expected from the entities, BDRRMCs and volunteer groups. Moreover, the phrase 'had advised all Barangays along' in R2, is the move that the CDRMO-OPCEN made due to the approaching flood risks. Furthermore, as seen in

the following phrase in R2, which is 'to trigger their early warning sirens and to conduct force evacuation within their flood and landslide prone area due to the increasing water level status of', is a response to the advice from the CDRRMO-OPCEN. Lastly, in R3's 'reported the overflow' is the way the Tacunan Barangay-based disaster response volunteers, as entities, acted upon the current condition of Sierra Madre.

## CONCLUSION

The functions of the elements present in the posts and signages reveal the construction of public announcements and suggest that copywriters can use more varied ways to compose public notifications with the help of the elements. They can employ synonyms and antonyms to aid possible dubieties in sentences with existing homonyms. Through this, announcements can be more detailed, and readers can better conceptualize the message since they will refer to the similarity or polarity of terms rather than the lexical meaning itself. Thus, copywriters will learn that composing announcements containing significant keywords is vital to deliver a public message that is understandable for residents to ensure that they can effectively apply the directions of the authorities from the advisories and signages.

Furthermore, identifying elements also implies that awareness of semantic elements that causes ambiguities, such as homonyms and hypernyms, is required in making public announcements. Copywriters should consider their types of audiences and the languages their readers know. Once announcement texts need highly technical words, they must incorporate other elements like hyponyms or synonyms to elaborate the jargon. In this way, readers will not only understand the entirety of the post, but they can adopt the use of such terms if it appears and is utilized in other sentences and future announcements and signages.

Moreover, semantic relations refer to the meaning and relationship between words and phrases in a sentence. This study implies that the right combination of entities and language can help convey meaningful information clearly and concisely during a crisis in information dissemination, such as disaster announcements and signages. Copywriters who use proper semantic relations in their writing make it easier for readers to understand the message meant, especially in emergencies where clear and concise communication is critical. By considering semantic relations, copywriters can create more effective and easily understood public service announcements that can help keep people safe and informed.

Additionally, the categories that were found in the analysis also imply that messages contained in announcements can be categorized based on their purpose, whether it is for describing a situation or location, letting citizens know the cause, planning for mitigation, encouraging others to be prepared, educating them how to respond, and so on. Ultimately, the success of disaster communication depends on the ability of copywriters to craft messages that are accurate, impactful, and easily understood.

Since this study focuses on semantic analysis, future researchers should explore further studies aligned with disaster preparedness and other semantic analysis forms and types, such as semantic roles. Another aspect worth exploring for future researchers, specifically those in computer programming, is the relationship of Semantic Analysis with search engines such as those used in social media because the researchers found out that the relationships formed by entities and other text can affect the information dissemination on readers' end.

On top of that, based on the results from the given data, it was proven that in announcements and signages, texts contain different elements and that the relationship of words can affect the message's meaning. However, there are other elements that researchers have yet to find in the gathered posts. Due to this, future studies should collect more announcements to find more elements in such texts. Researchers further suggest that they must find more physical signages around Davao City because this study only included a few compared to the number of collected announcement posts from online sources. Prospective researchers can then include other calamities or crises that need public service announcements, such as health crises and other natural phenomena. Through this, they will cover a wider scope and address possible issues related to language use.

Bearing everything in mind, throughout conducting the study, the researchers learned that the announcements and signages in Davao City commonly consist of entities that emphasize the concerned residents and organizations, locations, and suggested actions concerning disasters. These entities often belong to the elements of semantics: Homonyms, Hypernyms, Hyponyms, Polysemy, Synonymy, and Antonymy. They elaborate on the distinctions of the terms of the entities from their similar words that characterize different meanings. In addition, the researchers have discovered that classifying the entities according to their elements facilitates the comprehension of their lexical terms and their sense within a sentence. Ergo, minimizing ambiguity while maximizing information retention and faster response for effective communication.

Moreover, the researchers also realized that analyzing the semantic relation of entities with their neighboring words, phrases, clauses, or sentences and vice versa can provide adequate information on how the construction of announcements and messages in signages is essential in managing disaster risk and eliciting a response from citizens. It seriously points out that creating messages for announcements and signages is vital because each relationship formed with an entity can provide different meanings and contexts. Subsequently, it throws light on citizens the focus of the announcement or signage they are reading, whether it is for mitigation of risk, describing a situation, understanding the cause of the disaster, and many more.

Ergo, researchers strongly believe that this study prompts copywriters of public service announcements to consider the semantic relations in crafting their publication materials to deliver clear and concise information that enhances the effectivity and influence of disaster announcements and signages. By carefully selecting words and

phrases, disaster copywriters can help ensure that diverse audiences with different literacy and comprehension levels understand their messages.

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