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Lexical Frames in Natural Disaster News

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Abstract

This present study examines the lexical frames in natural disaster news with the goal to create a list of commonly-occurring lexical frames in this news genre as a resource for students and teachers. A lexical frame in this study is defined as a sequence of words with a slot of one word within the frame that can be filled by two or more variants. To investigate this structure, a 188,637-word corpus is constructed using natural disaster news from four online news sources. The period of data collection is one year to include natural disasters that are seasonal. Lexical frames included in the analysis must be five words in length and occur over 40 times per million in at least three different news and in at least three out of the four news subcopora. In total, 85 lexical frames are identified and they are grouped into three structural categories (verb-based, other-content-word and function-word frames) and four functional categories (stance expressions, discourse organizers, referential expressions and news content lexical frames). The analysis shows that the study of lexical frames in a specialized corpus can be a valuable resource for both students and teachers with regard to learning and instruction of writing in this genre.

INTRODUCTION

The importance and prevalence of formulaic language, which is "a sequence, continuous or discontinuous, of words or other elements, which is, or appears to be, prefabricated: that is, stored and retrieved whole from memory at the time of use" (Wray, 2002, p. 465), is undeniable and they make up a big part of language in use (Nattinger & DeCarrico, 1992; Schmitt & Carter, 2004). In the context of second language learning, it is found that formulaic language is processed more quickly in reading (Jiang & Nekrasova, 2007) and in writing, instruction of formulaic language can be of benefit for students (AlHassan & Wood, 2015; Peters & Pauwels, 2015). As such, mastery of formulaic language is crucial for second language learners (Nattinger & DeCarrico, 1992; Wray, 2002).

The aspects of formulaic language that are of interest to many researchers are, for example, collocations, lexical bundles and lexical frames. In this study, the investigated formulaic structure is lexical frames, also known as phrase frames or p-frames. The motivation behind the analysis of lexical frames in natural disaster news is pedagogical in nature as the author has witnessed first-hand the difficulty that many students faced when learning to translate

news from Thai to English. One reason is that students were not quite familiar with how to write English news. Given that formulaic language can be "building blocks" (Biber & Conrad, 1999, p. 185) for students, providing such assistance to writing for students in the form of lexical frames can be of great benefit.

LITERATURE REVIEW

Since lexical frames and lexical bundles are often discussed together due to their similarity in structure and function, this section will briefly discuss lexical bundles prior to lexical frames.

Lexical bundles are "sequences of words that commonly go together in natural discourse" in either conversation or writing (Biber & Conrad, 1999, p. 184) that occur at a certain frequency, for example, at 10 or 40 per million words, and are not used by just one individual. Studies into lexical bundles group these sequences according to their structures and their functions. There are different structural and functional categories depending on different researchers or different purposes of the study. Research into lexical bundles reveals that this unit of language is prevalent and while several disciplines can share lexical bundles (Simpson-Vlach & Ellis, 2010), lexical bundles can also be genre- and discipline-specific as well (Cortes, 2004).

As for lexical frames, they are also referred to as phrase-frames or p-frames and they are defined as sequences of words that "differ only one word in the same position together" (Römer, 2009, p. 91); in other words, they are formulaic sequence that are "discontinuous" (Gray & Biber, 2013, p. 110) since there is a slot within the sequence that can be filled by two or more words. Those words are called "variants", and the slot that can be filled by these variants are represented by an asterisk or a "wildcard" symbol (Römer, 2009, p. 91). In this study, lexical frames are italicized. An example from this study is the frame *latest in a * of* where the slot in the fourth word position marked by * can be filled by word variants. For this frame, the three word variants for the slot are "series", "string" and "parade". The frame can also be written in a schema in which the variants are embedded in the frame, with each variant separated by commas within square brackets: *latest in a* [series, string, parade] *of*.

In earlier studies of lexical frames such as one by Römer (2009), the length of lexical frames being investigated are three or four words; however, in later studies, the common length of lexical frames and five or six words in length (Cunningham, 2017; Liu & Chen, 2022; Lu et al., 2018). Most studies into lexical frames extract the sequences for analysis based on the frequency and range. The frequency thresholds in different studies vary and they are somewhat arbitrary, similar to those in lexical bundle research. For example, in their study of lexical frames in academic prose and conversation, Gray and Biber (2013) set the threshold at 40 times per million words. Cunningham (2017) set a frequency cut-off point of 20 times per million, while Lu et al. (2018) specifies different raw frequency thresholds for five- and six-word frames at 16 and 12 times for a corpus size of 517,703 words. As for range, the threshold and criteria also depend on the nature of the corpus and the purpose of the analysis. For instance, Cunningham (2017) set the criterion for phrase frames occurring in six out of eight subcorpora to be included in the analysis, while Liu and Chen (2022) specify two requirements that the

frames must occur in at least four texts as well as at least once in each subcorpus. Manual selections of lexical frames are required to further filter the results.

In most studies, lexical frames or phrase frames are categorized according to their structures and functions. Several studies of lexical frames also adhere to the broad structures posited by Gray and Biber (2013) where the frames are divided into three categories: verb-based, other-content-word and function-word. For functions of lexical frames, commonly-used functional categories are adopted from lexical bundle studies by Biber et al. (2004) or Simpson-Vlach and Ellis (2010), which share the three main functional categories: stance expressions, discourse organizers and referential expressions. The differences include the fact that, in Biber et al. (2004), there is a fourth category called special conversational functions since one of the corpora in the study is data from spoken conversations. In addition, the two study differ slightly on the sub-categories within each main one; for example, the category of impresicion in Biber et al. (2004) is called vagueness markers in Simpson-Vlach and Ellis (2010). Subsequent studies on lexical frames usually adopt these main functional categories and in some cases, new functional categories are created to include the lexical frames that are unique in function. For instance, in a study by Liu and Chen (2022), the category of multifunction lexical frames is added as another main functional category because the word variants in the slots can affect and influence the overall functions of the frames, resulting in different functions of the same frame.

Lexical frames behave differently in spoken and written discourse (Liu & Chen, 2022). and in writing, lexical frames are clearly genre-specific such as in social science writings (Lu et al., 2018), mathematical research articles (Cunningham, 2017) or business English (He et al., 2021). Appropriate usage of lexical frames also distinguishes expert writers from their novice counterparts (Walcott, 2021) or native speakers from non-native learners of English (Ren, 2022; Song & Sun, 2024).

Considering how prevalent, important and useful lexical frames can be, this study sets out to investigate lexical frames in a specialized genre of natural disaster news articles. The goal is to create a list of commonly-occurring lexical frames that can be used as a resource for students when they translate, write or edit this genre of English news, as well as for teachers to design materials and instruction.

METHODOLOGY

This study collected and compiled natural disaster news from four different online English news sources to create a natural disaster news corpus to investigate lexical frames. The four English news sources are based in the US, the UK, the Middle East and Thailand. They are chosen primarily due to their geographical locations that would yield different types of disaster news. The period of data collection is one year to include news reporting that are seasonal in nature, such as snowstorms or blizzards during the winter months in the northern hemisphere or hurricanes and cyclones during the storm season.

The definition of natural disasters in this study is taken from the Encyclopaedia Britannica and they are defined as disasters that are caused by weather and climate conditions or change (Metych, 2024). All news articles that correspond to this definition of natural disasters are included in the corpus; however, news reports that do not relate to the main incident, such as follow-up journalistic reports on the aftermath of a disaster on a community written long after when the incident happened, are excluded from the corpus.

Table 1 below outlines the number of texts, word types and wordcount (or word tokens) of each subcorpus. In total, the disaster news corpus size is 188,637 words with 442 texts.

Table 1

Natural disaster news corpus

Natural Disaster News Corpus	Number of Texts	Types	Wordcount (Tokens)
News Subcorpus 1	103	6,048	42,495
News Subcorpus 2	122	7,318	54,775
News Subcorpus 3	91	5,868	34,833
News Subcorpus 4	126	7,253	56,534
Total	**442**	**26,487**	**188,637**

The lexical frames investigated in this study are five words in length, following the preferred lengths investigated in other previous studies on lexical frames (Cunningham, 2017; Liu & Chen, 2022; Lu et al., 2018) and contain one slot that can be filled by two or more different words in the second, third- and fourth- word position. The frequency threshold for the lexical frames to be included in this analysis is 40 per million words to allow the results to be manageable. If the threshold were set too low, this would yield a smaller number of lexical frames and, if too high, the lexical frames extracted from the corpus would be too considerable for further manual categorization. The lexical frames must also occur in 3 out of 4 subcorpora and in at least three different texts to ensure that the lexical frames are common in the natural disaster news genre across different news sources. Finally, they must occur in more than one incident to exclude lexical frames that occur frequently simply because of the content of the news.

Lexical frames are automatically extracted from the natural disaster news corpus using the program AntConc (version 4.3.0). AntConc 4.3.0 features a n-gram query function that allows users to specify how many open slots to include in the sequences extracted. In this study, one open slot is selected. An advantage of using AntConc is that the program allows users to examine the concordance lines for each lexical frame with ease. All lexical frames extracted from the corpus are also manually examined and filtered through.

In the results and discussion section, the lexical frames are italicized and the slot in each frame is marked with a *, e.g., *are becoming more* * as. The words that can fill in the slots are referred to as variants. Variants can also be inserted within the frame and will be bookended by square brackets, e.g., *are becoming more* [powerful, frequent] *as*. Not all variants may be listed in the examples and such cases will be clearly specified.

RESULT AND DISCUSSION

The lexical frames extracted from the disaster news corpora underwent the manual inclusion and exclusion process where the lexical frames not meeting the requirements outlined in the methodology section were excluded from the analysis. After this process, the total number of lexical frames in this disaster news corpus is 85 lexical frames. These lexical frames are sorted into different structural and functional categories and will be discussed separately in detail in the subsequent sections.

Structures of lexical frames

This study adopts the structural categorization of lexical frames by Grey and Biber (2013), in which the lexical frames are divided into three groups: verb-based, other-content-word and function-word frames. The number and the disaster news lexical frames in each structure are summarized in Table 2 below.

Table 2

Structures of disaster news lexical frames

Structural Category	Number of Lexical Frames	Lexical Frames
Verb-based	38 (45%)	Passive verb-based frames • that * people had been • more than * people were • were killed and * injured • at least * people are • killed and * others injured • people were killed * the • the death toll * rise • people have been * to • was * by a falling • have been * in the • people have been * by • were * and more than • had been * by the • is expected to * the • have been * so far • one person was * in • three people were * and • at least * people were • one * was killed in • the * was expected to Active verb-based frames • there were no * reports • there were no * of • are becoming more * as • said in a * on • the * said in a • said in a * that • said in a * post • killed at least * people • killing at least * people • killed more than * people

Structural Category	Number of Lexical Frames	Lexical Frames
		• at least * people died • said * a news conference • people have died * the • climate change has * the • to * away from the • people to * their homes <u>Passtive-active verb-based frames</u> • more than * people have • at least * people have
Other-content-word	38 (45%)	<u>Location content words</u> • in * parts of the • in the * city of • in the * province of • in the * town of • in the * part of • the * of the country • in the * state of • in the coastal * of • on the * side of • in the * region of • as well as * of • the * of the city • and * parts of the • in * areas of the • the * of their homes • and the * island of • on the * coast of • the city of * in <u>Natural disaster content words</u> • the * of the storm • the * of climate change • the * of the damage • a state of * in • heavy rain and * winds • the * natural disaster in • the * of the disaster • on the * island of • latest in a * of • one of the * storms • the full * of the • the water level * the <u>Other content words</u> • tens of * of people • at least * people dead • a total of * people • more than a * people • according to the * of • according to the * meteorological • over the * few days • in the past * days

Structural Category	Number of Lexical Frames	Lexical Frames
Function-word	9 (10%)	• to the * of the • in the * of the • at the * of the • from the * of the • in the * of a • of the * in the • for the * of the • of the * of the • with the * of the

As can be seen from the table above, verb-based frames and other-content-word frames make up the majority of the structure at 90% and function-word frames only account for 10% of the lexical frames.

For verb-based frames, the lexical frames that fall into this category can be further divided into frames with passive and active voice verb structures, with two lexical frames that can be either passive or active voices. The 20 passive structures contain frames primarily with verbs or specific numbers as variants in their slots, such as:

- *is expected to* [hit, be, enter, have, investigate, reach, weaken] *the*
- *have been* [confirmed, suspended, cancelled, damaged, found, living, retrieved] *in the*
- *more than* [20, 40, 100, 200, 230, 300, 500, 500] *people were*
- *at least* [two, five, six, seven, 12, 25] *people are*

There are only two passive voice verb-based frames with noun variant slots: *one* [person, man] *was killed in* and *the* [storm, eruption, hurricane, impact, system] *was expected to.*

The 16 verb-based frames in the active voice structures have nouns, verbs, prepositions, adjectives, and exact numbers. In most cases, with the exception of exact numbers, there seem to be fewer variants for their slots than the passive structures. Here are some examples of such active-voice verb-based frames:

- Nouns: *there were no* [reports, disruptions] *of*
- Verbs: *people to* [flee, evacuate] *their homes*
- Preposition: *people have died* [in, during] *the*
- Adjectives: *are becoming more* [powerful, frequent] *as*
- Exact numbers: *at least* [exact numbers (e.g., six, seven, 13, 163)] *people died*

The two verb-based frames that can be either passive or active are *more than* * people have and *at least* * *people have*. Both take on numbers as the variants in their slots. They can be followed either by a past participle, forming an active past perfect verb phrase (as in *more than* * *people have* + died), or by the past participle "been" to form a passive voice structure (as in *at least* * *people have* + been killed, been reported injured).

For the second structural category, other-content-word frames, the majority of the lexical frames contain content words that refer to either locations or natural disasters. The location

frames are mainly those where the variant words in the slots are modifiers of nouns:

- *on the* [Big, Channel, Greek, Hawaii, Hawaiian, nearby, neighbouring, Spanish] *island of*
- *in the* [eastern, Finistere, Indonesian, Kalehe, Kurdosh, north-eastern, northern, northwestern] *region of*
- *in the* [northeastern, northern, southern, adjacent, central, Chinese, coastal, eastern, hard-hit, north-western, Philippine, south-western, Turkish] *province of*

For lexical frames with references to natural disasters, they can refer to the disasters themselves or different aspects of the natural disasters:

- *one of the* [strongest, worst] *storms*
- *the* [extent, majority, scope, severity] *of the damage*
- *heavy rain and* [strong, high, furious] *winds*

The rest of the other-content-word frames are those containing organization name, numbers of people and time.

- *according to the* [Department, University, Ministry, Office] *of*
- *tens of* [thousands, millions] *of people*
- *over the* [next, past] *few days*

The last structural category, function-word frames, consists of 9 lexical frames that contain only function words in the frames. In this disaster news corpus, all function-word frames are prepositional phrases that contain the definite article 'the' and have many different words that are variants for the slots. For example, the frame *of the* * *in the* has six variant nouns for its slot: rivers, earthquake, houses, month, storm, and territory. The frame with the most number of variants is *in the* * *of the*, with 20 different variants, such as middle, wake, centre, face, aftermath and level.

Functions of lexical frames

For functions of lexical frames, this study adopts the three functional categories from the study of lexical bundles by Biber et al. (2004): stance expressions, discourse organizers and referential expressions. In addition, one category has been added to account for lexical frames that do not fit any existing category from Biber et al. (2004) but still perform functions related to disaster news. This fourth category is titled news content lexical frames.

All 85 lexical frames are grouped according to their functions in Table 3. The column on the left shows the lexical frames in italics with * marking the slot and the column on the right are the variants of each frame.

Table 3

Disaster news lexical frames

Functional Category 1: Stance Expression	
1A Obligation	
*people have been * to*	forced, asked, advised, confirmed, relocated, shifted, told
*to * away from the*	stay, move, keep
2A Intention/Prediction	
*the * was expected to*	storm, eruption, hurricane, impact, system
*is expected to * the*	hit, be, enter, have, investigate, reach, weaken
*the death toll * rise*	could, may, to
Functional Category 2: Discourse Organizer	
*as well as * of*	hundreds, many, parts, shortages
Functional Category 3: Referential Expression	
3A Identification/Focus	
*one of the * storms*	strongest, worst
*latest in a * of*	series, string, parade
*the * natural disaster in*	biggest, worst, deadliest
3B Specification of Attributes	
3B1 Quantity Specification	
*at least * people are*	numbers (two, five, six, seven, 12, 25)
*killing at least * people*	numbers (two, six, four, nine, 19, 25, 32, 111, 129, 130, 138)
*killed at least * people*	numbers (e.g., three, 11, 21, 24, 31, 34, 40, 111, 118, 130 131, 148, 400)
*at least * people have*	numbers (e.g., three, five, seven, ten, 10, 11, 15, 21, 23, 29, 34, 88, 979)
*at least * people died*	number (e.g., six, seven, nine, 19, 20, 42, 65, 100, 265)
*at least * people were*	numbers (e.g., two, three, 16, 12, 13, 31, 46, 150)
*at least * people dead*	number (under 100)
*are becoming more * as*	powerful, frequent
*more than * people were*	numbers (20, 40, 100, 200, 230, 300, 500, 500)
*were * and more than*	rescued, activated, cancelled, flooded, killed
*killed more than * people*	numbers (30, 40, 100, 130, 300, 350, 400)
*more than * people have*	numbers (20, 40, 50, 150, 250)
*more than a * people*	dozen, million
*were killed and * injured*	number (44, 962, 198, dozens, eight)
*killed and * others injured*	numbers (six, eight, 18, 36, 50, 85, 100)
*that * people had been*	several, multiple, two, numbers (15, 26, 32)
*a total of * people*	numbers (11, 18, 37, 55, 81, 142)
*tens of * of people*	thousands, millions
*three people were * and*	killed, trapped
*one person was * in*	killed, trapped
*one * was killed in*	person, man
*there were no * of*	reports, disruptions
*there were no * reports*	immediate, initial
3B2 Tangible Framing Attributes	
*and * parts of the*	southern, northern. many, other
*the water level * the*	in, of
*and the * island of*	resort, nearby, Spanish
*the * of their homes*	rubble, back, exteriors, floors, roofs, rooftops
*the * of the city*	coast, heart, north, outskirts, roof, south
*the * of the storm*	center, path, eye, remnants,
*the * of the country*	south, east, rest, center, north, slopes, southeast
*of the * in the*	rivers, earthquake, houses, month, storm, territory
3B3 Intangible Framing Attributes	
*the city of * in*	city names (Cuenca, Geelong, Haidong, Khoi, Recife, Suqian, Tak)
*the full * of the*	extent, force, scale

*the * of the disaster*	face, scope, brunt, extent, scale, toll
*a state of * in*	emergency, catastrophe
*the * of the damage*	extent, majority, scope, severity
*the * of climate change*	effects, impact, brunt, evolution, impacts, repercussions
*with the * of the*	aftermath, impact, onset, scope, peak
*of the * of the*	extent, population, start, aftermath
*for the * of the*	duration, expansion, extent, history, rest
*in the * of a*	form, disappearance, grip, wake
*from the * of the*	force, movement, pressure
3C Time/Place Reference	
3C1 Time Reference	
*in the past * days*	few, several, two, five
*over the * few days*	next, past
3C2 Place Reference	
*on the * coast of*	west, south-east, north-west
*in * areas of the*	different, most, mountainous, northern, several, some, white-owned
*on the * island of*	Big, Channel, Greek, Hawaii, Hawaiian, nearby, neighbouring, Spanish
*in the * region of*	eastern, Finistere, Indonesian, Kalehe, Kurdosh, north-eastern, northern, northwestern
*on the * side of*	eastern, other, west, south, southern
*in the coastal * of*	cities, city, province, towns, provinces, town, area
*in the * state of*	western, southern, central, Indian, neighboring, southeastern, US
*in the * part of*	northern, southern, upper, eastern, northeastern, southeastern
*in the * town of*	central, coastal, small, southern, eastern, hard-hit, nearby, old, northwestern, northeastern
*in the * province of*	northeastern, northern, southern, adjacent, central, Chinese, coastal, eastern, hard-hit, north-western, Philippine, south-western, Turkish
*in the * city of*	central, port, coastal, northern, capital, copper-bent, eastern, Mediterranean, neighbouring, northeaster, resort
*in * parts of the*	some, many, different, other, northern, several, large, seven, various
3C3 Multifunction	
*to the * of the*	south, families, southeast, severity, aid, appeals, boundary, misery, plights, sides, thickness, victims
*in the * of the*	middle, east, wake, south, southeast, waters, centre, aftermath, face, path, bulletin, direction, foothills, history, level, mountains, one, rest, roof, volume
*at the * of the*	base, time, beginning, start, bottom, epicenter, heart, juncture, scene
Functional Category 4: News Content Lexical Frame	
*according to the * meteorological*	Japan, India, Japanese, China, Indian, Iraqi, island's, Korean, State, World
*according to the * of*	Department, University, Ministry, Office
*said in a * post*	Twitter, telegram, Facebook
*said in a * that*	statement, report, tweet
*said in a * on*	statement, post, report, tweet, advisory, alert, update
*said * a news conference*	at, during, in
*the * said in a*	authority, agency, ANC, Children, club, council, county, ministry, NHC, utility
*was * by a falling*	hit, struck, killed, crushed
*have been * in the*	confirmed, injured, killed, suspended, damaged, found
*people have been * by*	affected, killed, displaced, hit
*had been * by the*	affected, damaged, hit, hurt, killed, removed
*people were killed * the*	in, during
*people have died * the*	in, during
*people to * their homes*	flee, leave, evacuate
*have been * so far*	reported, evacuated, found, rescued
*climate change has * the*	increased, amplified
*heavy rain and * winds*	strong, high, furious

Altogether, the number of the lexical frames in each functional category is presented in Table 4 below and each category will be discussed separately.

Table 4

Functions of disaster news lexical frames

Functional Category	Number of Lexical Frames	Percentage
Stance Expression	5	6%
Discourse Organizer	1	1%
Referential Expression	62	73%
News Content Lexical Frame	17	20%

It is evident from the table that referential expression frames make up the majority of the disaster news lexical frames at 62 out of 85 frames (73%), followed by 17 news content lexical frames (20%). There are five stance expressions and only one discourse organizer lexical frame.

Stance expressions

For stance expressions, they express obligation and intention/prediction. The obligation lexical frames are *people have been * to* and *to * away from the*. The former are used with verbs such as "forced", "asked" and "advised" in the slot and the frame primarily appears in the context of an evacuation or relocation:

- Thousands of people *have been forced* to evacuate their homes and…
- …and people *have been asked* to avoid the area.

As for the frame *to * away from the*, the verb variants that fit the slot are "stay", "move" and "keep" and the frame occurs after verbs that show obligation such as "urged" and "asked":

- People have also been asked to *stay away from the* section of beach…
- The Maritime and Coastguard Agency urged people *to keep away from the* coast.

The intention/prediction lexical frames are expressed through the passivized structure of the verb "expect" in the frames as in *the * was expected to* and *is expected to * the*. The frame *the * was expected to* takes on noun variants of natural disasters, such as "storm", "eruption" and "hurricane" and are used to predict the movement or the intensity of the natural disaster:

- *The storm was expected to* continue moving northward…
- *…the eruption was expected to* continue decreasing in intensity…
- *The hurricane was expected to* continue on that path…

For the frame is *expected to * the*, the verbs that fit in the slot vary, but the frame are used where natural disasters are predicted to happen:

- The cold-weather system *is expected to hit the* Mid-Atlantic region by Saturday…
- Khanun *is expected to reach the* southern resort island of Jeju…
- …Taiwan where Haikui *is expected to have the* maximum effect…

The other intention/prediction lexical frame is *the death toll* * rise and the stance is expressed through the modals "could" and "may" as variants for the slots or through the verb phrase preceding the frame as in "prepare for *the death toll to rise*". When used with the modals, this frame usaully follows the noun "fears" or the verb "warn" and is followed by the conjuntion "as" that introduces another clause about the possible reason for the increase:

- …fears that *the death toll could rise* as rescue work carries on.
- Authorities warn that *the death toll may rise* as the floodwater subsides.

Discourse organizers

The sole discourse organizer lexical frame is *as well as* * of, which takes on the following noun variants: hundreds, parts, many, and shortages. All instances of the lexical frames *as well as* * *of are* used to link noun phrases, such as:

- …villages near the dam *as well as many of* the roads connecting them...
- *…as well as shortages of* food and other basic necessities…

Referential expressions

As for referential expressions, the 62 lexical frames in this function can be further divided into four sub-categories: identification/focus, specification of attributes, time/place reference and multifunction. The number and the proportions of the frames are in Table 5 below.

Table 5

Referential expression functions of disaster news lexical frames

Referential Sub-category	Number of Lexical Frames	Percentage
Identification/Focus	3	5%
Specification of Attributes	42	68%
Time/Place Reference	14	23%
Multifunction	3	5%

1) Identification/focus

From the table, it can be seen that there are only three lexical frames that perform the function of identification/focus and in this corpus, they are similar in that either the frames themselves or the variants for the slot contain superlative adjectives, namely:

- *one of the* [strongest, worst] *storms*
- *the* [biggest, worst, deadliest] *natural disaster in*
- *latest in a* [series, string, parade] *of*

The frames *one of the* [strongest, worst] *storms* and *the* [biggest, worst, deadliest] *natural disaster in* are used similary in the context of a storm happening somewhere and with a time reference, such as years, century or in a place's history:

- …as China is battered by *one of the strongest storms* to hit the country in years.
- Cyclone Mocha was *one of the strongest storms* to make landfall in the region this century…
- …, *the deadliest natural disaster in* the region in centuries.
- …left thousands homeless in *the worst natural disaster in* the US state's history.

The other frame in this functional category, *latest in a* [series, string, parade] *of*, is preceeded by the natural disasters that were reported in the respective news article (e.g., wildfires), and this frame is followed by noun phrases that refer to larger natural disaster events (e.g., severe weather events):

- The wildfires in Hawaii are the *latest in a series of* severe weather events that have ravaged parts of the US.
- The disaster…is *the latest in a series of* deadly weather events in South Asia's mountains blamed on climate change.
- A new weather system with rain…*the latest in a parade of* atmospheric rivers that have wreaked havoc across the state in recent weeks.

2) Specification of attributes

As for the function of specification of attributes, this functional category is divided further into three groups: quantity specification, tangible framing attributes, and intangible framing attributes. The proportions of the lexical frames in these functions are summarized in Table 6.

Table 6

Lexical frame function of specification of attributes

Specification of Attributes Sub-category	Number of Lexical Frames	Percentage
Quantity Specification	23	55%
Tangible Framing Attributes	8	19%
Intangible Framing Attributes	11	26%

A. Quantity specification

More than half of the referential lexical frames are those that perform the function of quantity specification (23 lexical frames). In this functional category, the lexical frames can be grouped further as those that contain certain words in the frames and those that take on certain kinds of words as their variants. In the first group, the frames can contain the words or phrases "at least", "more" or "more than" and "no". All instances of the frames with "at least" are cases where the slots are filled by specific numbers, usually below 100:

- *killing at least * people*
  Examples of variants: two, six, four, nine, 25, 32, 111, 129, 138
- *at least * people have*
  Examples of variants: three, 10, 15, 21, 979
- *at least * people died*
  Examples of variants: two, nine, six, seven, 20, 65, 100, 265

Although they are similar in terms of the key words that they contain and the variants for their slots, the patterns of occurrences of these frames differ slightly from each other. For *at least * people are*, it is followed by the adjectives "dead" or "missing":

- *At least 12 people are* dead and about 20 missing…
- *At least 25 people are* missing after a landslide at an unregulated jade mine…

Similary, *at least * people were* is also used to report on death, missing persons and, in addition, injuries:

- *At least two people were* killed when a landslide buried dozens of lorries…
- *At least 150 people were* still missing.
- *At least 16 people were* injured in France, seven of them emergency workers.

The frame *at least * people have* is primarily followed by the past participle "died" or the passive structure "been killed":

- *At least 21 people have* died in the Dominican Republic after heavy rain…
- *At least four people have* been killed in a small town in Texas…

The frame *at least * people died* is followed by "in", "after" or "as" and a description of the natural disasters that happened

- *At least 162 people died* in a landslide in the same area…
- *At least six people died* after tornadoes and severe storms tore through…
- *…at least 100 people died* as torrential rain triggered landslides…

The final frame in the group of lexical frames that begins with "at least" is *at least * people dead*. Almost all instances of occurences of this frame are preceded by the verb "leave" in the form of "leaving" or "left" and in several cases, it is followed by mentions of injuries:

- …tornadoes tore through the US state of Tennessee, leaving *at least six people dead* and injuring dozens…
- Hurricane Lidia left *at least two people dead* in Mexico…

The other two "at least" frames are those that begin with the verb "kill": *killing at least * people* and *killed at least * people*. The frame *killing at least * people* occurs primarily as a present participle phrase after the main clause about the natural disasters that happened:

- Torrential rains caused flooding in western and northern Rwanda, *killing at least 129 people*,…
- …four major storms hit Madagascar, *killing at least 138 people*,…

On the other hand, the verb "killed" in the frame killed at least * people can be either a past simple form of the main verb or a past participle form of a present perfect structure:

- Heavy flooding from seasonal rains in Afghanistan *killed at least 31 people*…
- A huge landslide in northwestern Pakistan has *killed at least three people*…

For frames with "more" and "more than", one frame contains just the word more while the rest contain the phrase "more than". The "more" frame is *are becoming more* [powerful, frequent] *as*, signifying increasing occurences of stroms as a result of climate change:

- Scientists have warned that storms *are becoming more powerful as* the world gets warmer with climate change.
- …they *are becoming more frequent as* global warming contributes to the melting of glaciers there.

Other "more than" frames, with the exception of one, take on numbers in their slots similar to the "at least" frames but primarily with round numbers in in increments of ten, such as 20, 40, 50, 150 and 250. The context of use for each "more than" lexicl frames also varies slightly, with most being about death. For example, the frame *more than * people have* either precedes the verb "died" or the verb phrase "been killed":

- *More than 40 people have* died in Algeria, Italy and Greece…
- *More than 150 people have* been killed after an earthquake struck…

The frame *more than * people were* is also used in the context of death with the verb "killed" as well as the context of injuries, followed by references to the disasters:

- *More than 100 people were* killed in blazes that began last week…
- *More than 40 people were* injured in Taiwan after Typhoon Haikui ripped across the island…

The last "more than" frame with number variants is *killed more than * people* and it is preceded by natural disasters in almost all occurences. The verb "killed" in the frame is either in the past simple tense or part of the present perfect preceded by the auxiliary "have":

- In July, record rains *killed more than 100 people* over two weeks…
- The floods have *killed more than 130 people* in Kenya…

One frame takes on a slot with quantity units such as dozen and million: *more than a* [dozen, million] *people*. The frame is used to refer to the people killed, injured or affected by what happened:

- *More than a dozen people* have been killed by a series of landslides…
- The downpours have displaced *more than a million people* in Somalia…

The other "more than" frame does not take on numbers in their slots but the variants are part participles: *were* [rescued, activated, cancelled, flooded, killed] *and more than*. The frame itself is also followed by numbers:

● …about 5,500 National Guard troops *were activated and more than* 30,000 utility workers stood by…
● …hectares of farmland *were flooded and more than* half a million livestock were lost.

In addition to the "at least" and "more" frames that refers to the quantity of something, there are also the "no" quantity frames showing a lack of quantity in reports or services: *there were no* [reports, disruptions] *of* and *there were no* [immediate, initial] *reports*. The frame *there were no * of*, when the appear with the noun "reports" in the slot, is followed by references to deaths, injuries or damage:

● …*there were no reports of* missing persons in nearby towns...
● *There were no reports of* serious injuries...
● *There were no reports of* damage or casualties.

There is only one instance of the noun "disruptions" in the slot of the lexical frame *there were no * of* and it is followed by the noun phrase "flights to and from Iceland" in a news on a volcanic eruption.

For the frame *there were no * reports*, it also is followed by references to casulties or damage:

● …*there were no immediate reports* of casualties in neighbouring Bangladesh,…
● …*there were no initial reports* of structural damage…

Three lexical frames in this functional category of quantity specification already contain a quantifying word in the frames ("three" and "one") and they only take on two specific words each: *three people were* [killed, trapped] *and*, *one person was* [killed, trapped] *in* and *one* [person, man] *was killed in*.

For *three people were* [killed, trapped] *and*, the clause that follows the conjunction "and" refers to people who were injured and were missing, followed by a reference to the incident:

● …*three people were killed and* more than 800 injured Saturday in a 5.9 earthquake…
● *Three people were killed and* three others are missing in flooding…

As for the frame *one person was* [killed, trapped] *in*, because the frame ends with a preposition, the noun phrases that follow are references to cities or states when the word "killed" appears in the slot:

● *One person was killed in* the resort city of Sochi.
● *One person was killed in* Maine when a tree limb fell on his vehicle…

The sole instance of one person was trapped in is followed by the noun phrase "the wreakage" of a collapsed house in an earthquake.

B. Tangible framing attributes

In this functional category, most lexical frames are references to attributes of geographical locations with the words in the slots being nouns or modifiers that are adjectives or nouns. Three lexical frames that take on nouns as the variants in the slots occur after prepositions:

- *the * of the country*
  Examples of variants: south, center, east, southeast, rest, slopes
  Examples of the lexical frames in context:
    - …their jamboree campsite in *the south of the country* earlier this week.
    - …in Derna, a city in *the east of the country*.
- *the * of the city*
  Examples of variants: coast, north, south, outskirts
  Examples of the lexical frames in context:
    - …near Moreton Bay, off *the coast of the city* of Brisbane.
    - Hospital Cervello, in *the north of the city*, is…
- *the * of their homes*
  Examples of variants: rubble, back, exteriors, floors, roofs
    - …digging bodies and survivors out from *the rubble of their homes*.
    - …people who had sought refuge on *the roofs of their homes*…

Two lexical frames have modifiers that are adjectives or nouns as the variants in their slots: *and the * island of* and *and * parts of the*. The modifiers that fit in the slot of *and the * island of* are “resort”, “nearby” and “Spanish” and this frame is followed by proper names of the islands:

- …the nearby mountain region of Pelion *and the resort island of* Skiathos
- Guam *and the nearby island of* Rota remain under a typhoon warning.

The lexical frame *and * parts of the* takes on such adjectives as “southern”, “northern”, “many” and “other” as the variants for its slot. This frame is followed by references to geographical locations:

- …was recorded in the mountainous eastern *and southern parts of the* island.
- …paralyzing rail traffic in the Bavarian capital *and other parts of the* region.

Other frames in the tangible framing attributes category are three lexical frames that make references to the natural disasters and details of what happened:

- *the * of the storm*
  Examples of variants: center, path, eye, remnants
- *of the * in the*
  Examples of variants: rivers, earthquake, houses, storm
- *the water level* [in, of] *the*

For *the * of the storm*, the context and the patterns of usage of this frame can vary, ranging from as part of the subject of a clause, the object of a verb to the object of preposition:

- …as *the eye of the storm* passed over. (subject of a clause)
- The India Meteorological Department has since reduced *the classification of the storm*… (object of a verb)
- …caravan park lying right in *the path of the storm*… (object of preposition)

For the frame *of the * in the*, which only contains function words, this frame has a wide variety of nouns that can fill the slot, such as "rivers", "earthquake", "houses", "month", "storm" and "territory". However, despite the variety of the variants, what follows the frame is similar, which are references to geographical locations:

- Most *of the rivers in the* region…
- …the epicentre *of the earthquake in the* Al Haouz region.
- …until the end *of the month in the* north of the country.

The last lexical frame in the group that makes references to the natural disasters and its detail is *the water level * the* and its variants are only either "in" or "of". It is followed by rivers:

- …*the water level in the* Mekong River remains high…
- *The water level of the* capital region's Marikina River reached 16.1 metres…

Finally, the other lexical frames in the quantity specification category are those that contain specific types of word variants. Four such frames are *were killed and * injured, killed and * others injured, that * people had been* and *a total of * people*, which take on quantifying adjectives or specific numbers as their variants:

- *were killed and * injured*
  Examples of variants: dozens, eight, 44, 962, 198
- *killed and * others injured*
  Examples of variants: six, eight, 18, 36, 50
- *that * people had been*
  Examples of variants: several, multiple, two, 15, 26, 32
- *a total of * people*
  Examples of variants: 11, 18, 37, 55, 81, 142

Of this group, *were killed and * injured* and *killed and * others injured* share a pattern of usage where they are followed by a summary of what happened:

- …*were killed and 44 injured* in northwest Pakistan by a magnitude 6.5 earthquake…
- …*were killed and dozens injured* when a tornado ripped through the Texas Panhandle town…
- …*killed and 100 others injured* after a strong earthquake hit…

The frame *that * people had been* follows phrases with reporting verbs such as "reported", "said" or "told" and the verbs follow the frame vary:

- Witnesses told local media *that several people had been* left stranded…
- Officials…told local news outlets *that multiple people had been* trapped inside…

As for *a total of * people*, this frame is used in the context where death, injuries or missing persons are reported:

- *A total of 81 people* died in Kentucky...
- *A total of 55 people*, mainly emergency personnel, were injured...
- ...*a total of 11 people* had been reported missing...

The final lexical frame in this category is *tens of * of people*, which only takes either "thousands" or "millions" as its variants. The frame refers either to the people affected by the disasters or to the information about the population in a certain area:

- …*tens of thousands of people* across the country had been impacted by heavy rainfall…
- *Tens of millions of people* live in the densely populated coastal areas of southern China.

C. Intangible framing attributes

The lexical frames in this category serve as references to intangible attributes and they contain either only function words or content words related to the natural disasters.

The five frames that contain only function words are *with the * of the, of the * of the, for the * of the, in the * of a* and *from the * of the.* Some examples of the variants that can fill the slots are:

- *with the * of the*
  Examples of variants: aftermath, impact, onset, scope, peak
- *from the * of the*
  Examples of variants: force, movement, pressure

These function-word frames occur in various patterns of use depending on the words that fits in their slot. For example, when the frame *with the * of the* takes on the noun "aftermath" in the slot, the noun that follows the frame is "rainfall", but when appearing with the noun variant "scope" in the slot, it is followed by the noun "damage".

The other group of intangible attributes frames are six lexical frames that contain natural disaster content words: *a state of * in*, *the full * of the*, *the * of the damage*, *the * of the disaster*, *the * of climate change* and *the city of * in*. These frames take on a more limited number of variants in the slots compared to its function-word counterparts and their context of use is dependent on the words in the frames, rather than the variants. For example, the frame a state of * in only has two noun varaints, which are "emergency" and "catastrophe", and it primarily occurs after the verb "declare".

● Authorities have declared *a state of emergency in* Tsarevo…
● …the government declared *a state of catastrophe in* the La Araucanía region…

The frames *the full * of the, the * of the disaster, the * of the damage* and *the * of climate change* have several different noun variants that can fill the slots. However, most of the variants refer to either the scale or the effects of the situation and the frames are used in the context of the assessment of damages:

● *The full extent of* the storm damage was still being assessed.
● …they were assessing the damage and *the toll of the disaster* on children and families.
● *The extent of the damage* was not immediately clear.
● *The impact of climate change* on the frequency of storms is still unclear.

The final frame in the group is *the city of * in* with proper names of cities as variants of the slot and it is followed by larger geographical locations:

● *The city of Tak in* western Thailand…
● …near *the city of Khoi in* the West Azerbaijan province…

3) Time/place reference

The lexical frames that are time, place or text references are mainly references to places (12 lexical frames) and all of them begin with a preposition. Nine place reference lexical frames are in the pattern of "preposition + the + * + noun + of" and the nouns are specific geographical locations. The variants for the slots of the frames vary but the majority of them are cardinal directions (e.g., west or southern). Other variants can also be adjectives of country (e.g., Greek or Chinese) and adjectives indicating relative distance (e.g., adjacent or nearby).

In this group, the nine lexical frames can be further divided intro two types according to their pattern of use. The first type is those that are followed by proper names: *on the * island of, in the * province of, in the * town of, in the * city of,* and *in the * state of*. The proper names that follow are the names of the island, province, town, city and state in the frames:

● …has been raging *on the Greek island of* Rhodes…
● …affected 135,000 rai of land *in the adjacent province of* Phitsanulok…
● …*in the northeastern town of* Brechin.
● …1,000 bodies have been retrieved *in the Mediterranean city of* Derna.
● *In the northern state of* Uttar Pradesh…

The other type of such frames emcompasses the following frames: *on the * coast of, in the * region of, on the * side of* and *in the * part of*. The nouns in these frame are smaller parts (e.g., coast) of the nouns referring to larger geographical locations (e.g., Hawaii's Maui island) that follow the lexical frames:

● Bushfires *on the west coast of* Hawaii's Maui island…
● …mainly *in the northwestern region of* Brittany.

- …*on the eastern side of* Hong Kong Island
- …*in the southern part of* the country…

In terms of lexical frame pattern, another group of place reference frames are the two that are in the pattern of "in + * + plural noun + of + the":

- *in * areas of the*
  Examples of variants: different, most, mountainous, northern
  Example of concordance line:
    - as well as *in northern areas of the* United States.
- *in * parts of the*
  Examples of variants: some, different, other, northern
  Example of concordance line:
    - …that had occurred *in other parts of the* state

Finally, there is one place lexical frame where the slot requires noun variants: *in the coastal * of* and the variants are, for example, "city", "province" or "area".

The only two time-reference frames are similar in that they refer to a period of days: *in the past * days* takes on four adjective variants, which are two, five, few, several, while *over the * few days* has two adjective variants, which are next and past.

The frame *in the past* [few, several, two, five] *days* occurs in the context where the death toll or the effects of the natural disasters are mentioned:

- At least 34 people have died *in the past two days*…
- …and left thousands of households without electricity *in the past several days*.

For the frame *over the * few days*, when the word "next" is used in the slot, this frame appears in the context where something is expected to happen or to continue:

- …more aftershocks were likely *over the next few days*.
- Heavy rain is expected to persis*t over the next few days*.

When used with the variant noun "past", *over the * few days* is used where the severity of the situation is discussed:

- …mountainous areas that had seen heavy rains *over the past few days*…

4) Multifunction

There are three reference frames that are multifunctional in nature. They only contain function words in the frames, and they also fall in to the same pattern of "to/in/at + the + * + of + the". The variants for the frames in this group vary greatly. However, the majority of the variants are locations, but the frames may also take on variants that are time (e.g., start or beginning),

making them time references, or they may contain nouns such as “victims”, “misery”, or “many”, making them specification of attributes frames. Below are some examples of the various noun variants for each frame.

- *to the * of the*
  Examples of variants: south, families, severity, aid, thickness, victims
  Example of concordance line where the frame is a place reference:
    - Hurricane Dora, which was passing *to the south of the* island chain…
  Example of concordance line where the frame is a specification of attributes reference:
    - A crippling power crisis has added *to the misery of the* Bangladeshis

- *in the * of the*
  Examples of variants: east, centre, wake, aftermath, face, direction, history, volume, level
  Example of concordance line where the frame is a place reference:
    - They were sitting on a log *in the middle of the* river…
  Example of concordance line where the frame is a specification of attributes reference:
    - …showed dramatic changes *in the volume of the* lake.

- *at the * of the*
  Examples of variants: base, scene, time, beginning, start, request
  Example of concordance line where the frame is a place reference:
    - …a guide from the village *at the base of the* slope…
  Example of concordance line where the frame is a time reference:
    - …it emerged from the sea *at the beginning of the* last century…
  Example of concordance line where the frame is a specification of attributes reference:
    - …leave their homes *at the request of the* authorities…

News content lexical frame

The final top-level functional category is news content lexical frames and as the name suggests, these are the lexical frames that contain content words that are frequent or specific to natural disaster news reporting. There are 17 lexical frames in this category, and they account for 20% of the total lexical frames identified. They can be grouped based on the content words that they contain and the overall functions that they perform in the news. For example, 7 lexical frames perform the functions of reported speech with a reporting verb “say” (*said in a * that, said in a * post, said in a * on, said * a news conference* and *the * said in a*) or crediting external information sources with “according to” (*according to the * meteorological* and *according to the * of*).

These frames can occur before or after the external information in the news and when appearing after the information, there is a comma separating the information and the source. The sole frame that occurs only before the information from external sources is *said in a * that* as the word “that” in the frame is part of the reported speech:

- The Sikkim State Disaster Management Authority *said in a statement that* more than 2,000 people had been rescued…
- Ms Bass *said in a tweet that* there were no initial reports of structural damage…

Similarly, there is one lexical frame, *the * said in a*, that only occurs after the a direct quote from other sources:

- …spreading inland over west-central Mexico", *the NHC said in a* bulletin.
- …as the heatwave intensifies", *the WMO said in a* statement on Tuesday.

The other five frames in this group (*said in a * post, said * a news conference, said in a * on, according to the * meteorological* and *according to the * of*) can occur either before or after the external information. For the frames with "said", the information from external sources can also be in the form of a reported speech or a direct quote, while frames with "according to" do not co-occur with full direct quotes:

- Lasso *said in a Twitter post* that firefighters had been sent to assist residents.
- "It's going to take many years to rebuild Lahaina," Green *said at a news conference*.
- "…as the heatwave intensifies", the WMO *said in a statement on* Tuesday.
- …struck the southwestern part of Hokkaido, *according to the Japanese Meteorological* Agency.
- *According to the Japanese Meteorological* Agency, the heaviest rainfall recorded in Japan…
- *According to the University of* Hawaii, large fires are a nearly annual occurrence

Another group of news content lexical frame includes those that are used to discuss death, injuries, damages or a combination of these ideas. There are two types of such lexical frames: one is where the verb variants convey the references to death, injuries, or damages and their context of use varies depending on the variants in the slots:

- *was * by a falling*
  Examples of variants: hit, struck, killed, crushed
  Examples of concordance lines:
    - …a 59-year-old woman *was struck by a falling* tree…
    - …a four-year-old boy *was killed by a falling* wall…
- *people have been * by*
  Examples of variants: affected, killed, displaced, hit
  Examples of concordance lines:
    - …millions of *people have been hit by* extreme weather…
    - Thousands of *people have been displaced by* the heavy rains...
- *have been * in the*
  Examples of variants: confirmed, injured, killed, suspended, damaged
  Examples of concordance lines:
    - …17 additional fatalities *have been confirmed in the* wildfires…
    - …crops *have been damaged in the* province.

- *had been * by the*
  Examples of variants: affected, damaged, hit, hurt, killed, removed
  Examples of concordance lines:
    - …all Tennesseans who *had been affected by the* storms.
    - …affected residents who *had been hit by the* tornado's fury.

The second type is where the verbs related to death are in the frames and the variants are prepositions, as in the frame *people were killed* [in, during] *the* and the frame *people have died* [in, during] *the*. Both frames are similar in their pattern of occurences where they are followed by references to the natural disasters, locations or time:

- …*people were killed in the* severe weather…
- …*people were killed during* the storm…
- …*people were killed in* the Philippines and Taiwan…
- Two *people were killed in* the early hours of Sunday…
- …*three people have died in the* incident…
- …*people have died in the* Dominican Republic…
- …*people have died during* the past week…

The final group of news content lexical frames are the frames that are related to the details of the natural disasters. The frames can be details about the cause of the damages, such as *heavy rain and* [strong, high, furious] *winds*, or a contributing factor of natural disaster, such as *climate change has* [increased, amplified] *the*, which is followed by references to the intensity of extreme weather. Detail frames can also be about responses to the incident as in the two frames below:

- *have been* [reported, evacuated, found, rescued] *so far*
- *people to* [flee, leave, evacuate] *their homes*

As can be seen from the examples, on average, news content lexical frames take on a smaller, limited set of variants that are similar in terms of their overall meaning.

PEDAGOGICAL IMPLICATIONS

This study has identified a list of lexical frames that commonly occur in natural disaster news along with its variants, categorized by structures and functions. This list can be of great assistance for students and teachers as a reference of frequent phrases and their possible variations when they try to translate such news from Thai to English. However, as Simpson-Vlach and Ellis (2010) recommend in their study on Academic Formulas List that such lists should be used as "a starting point" (p. 502) from which classroom materials can be developed, emphasizing the importance of the context of use for each formula, the natural disaster lexical frames list should also be used as a resource to develop class materials as well in order to maximize the benefits of the list and tailor the materials to suit the needs of different teachers, groups of learners, or methods of instructions. Since the lexical frames are categorized by their functions in the

list, classroom activities and materials can be centered around the frames in each functional category and their sub-categories. Sripicharn (2010) suggets presenting students with concordance lines that are chosen by the teachers and giving students guiding questions so that they can discover and identify the language phenomena that are the objective of the task. Such approach can be readily adopted for lexical frames where teachers choose the concordance lines that contain some lexical frames and guide them to identify the frames, the variants or the pattern of use for the frames. In addition to the list itself, the natural disaster news corpus that was compiled for this study can be a resource for both students and teachers. Teachers can encourage and guide students to interact with the corpus directly to make queries beyond lexical frames.

CONCLUSION

This present study identifies and analyzes frequently-occurring five-word lexical frames with one slot in a natural disaster news corpus and the resulting list of 85 lexical frames can serve as a potential resource for writing for learners and teachers for specialized news writing lessons. Structurally, most of the lexical frames are verb-based frames and other-content-word frames, with only 10% belonging to the function-word structural category. When categorized by function, almost three-quarters lexical frames are referential expressions and one-fifth belong to the news content lexical frame function, a new category created for this corpus. Only a few perform the functions of stance expressions and discourse organizers. Although this study provides detailed examples of the lexical frames and their variants, categorized both by structures and by functions, this does not mean that they can be readily used in a classroom. This list of lexical frames can function as a resource for material design to suit the needs of teachers and learners. In addition, having a natural disaster news corpus readily available such as the one in this study can allow students to have hands-on experience in using and consulting a corpus in their own learning and at their own pace. The limitation of this study is that, while yielding detailed results, it focuses on only lexical frames from one specific genre of news in English and therefore, this leaves room for future research to investigate lexical frames in other news genres in English and the area of investigation can also be expanded to be more comparative in nature across different genres or languages such as English and Thai in order to benefit Thai learners in their English language learning.

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