

September 2017

The Technical Vocabulary Of Newspapers

Jiahui Zhu

The University of Western Ontario

Supervisor

Dr. Stuart Webb

The University of Western Ontario

Graduate Program in Education

A thesis submitted in partial fulfillment of the requirements for the degree in Master of Arts

© Jiahui Zhu 2017

Follow this and additional works at: <http://ir.lib.uwo.ca/etd>

 Part of the [Education Commons](#)

Recommended Citation

Zhu, Jiahui, "The Technical Vocabulary Of Newspapers" (2017). *Electronic Thesis and Dissertation Repository*. 4872.
<http://ir.lib.uwo.ca/etd/4872>

This Dissertation/Thesis is brought to you for free and open access by Scholarship@Western. It has been accepted for inclusion in Electronic Thesis and Dissertation Repository by an authorized administrator of Scholarship@Western. For more information, please contact tadam@uwo.ca.

Abstract

A seven-million-word newspaper corpus that was made up of approximately 7,600 newspaper articles posted to *The New York Times* website between June, 2015 and October, 2016 was created and analyzed to identify the technical vocabulary of a newspaper and determine its lexical coverage. The results showed that there were 405 technical words of the newspaper as a whole that accounted for 9.76% of the running words in the NYT corpus, and an average of 748 technical words of each newspaper section with an average lexical coverage of 23.82%. Identifying the technical vocabulary of a newspaper is valuable for language learners, because learning these words before reading articles may help to reduce the vocabulary burden. The findings also indicated that reading newspapers from the same section is likely to be more effective to learn vocabulary than reading articles randomly.

Keywords: newspapers, technical vocabulary, vocabulary, lexical coverage, corpus linguistics, word lists

Acknowledgement

I would like to thank many people who have helped me throughout my M.A. studies.

My deepest gratitude goes first and foremost to my supervisor, Dr. Stuart Webb, for his constant encouragement and guidance. He has walked me through all the stages of the writing of this thesis. Without his consistent and illuminating instruction, this thesis could not have reached its present form.

Second, I would like to express my heartfelt gratitude to all the professor who have taught me in this program: Dr. Elizabeth Agnes Nowicki, Dr. Farahnaz Faez, Dr. Immaculate Kizito Namukasa, Dr. Lori Kirkpatrick, Dr. Pejman Habibie. They have instructed and helped me a lot.

Last my thanks go to my beloved family for their loving considerations and great confidence in me all through these years. I also owe my sincere gratitude to my friends and my fellow classmates who gave me their help and time in listening to me and helping me work out my problems during the difficult course of the thesis.

Table of Contents

Abstract.....	I
Acknowledgement.....	II
Table of Contents	III
List of Tables	V
List of Appendices.....	VI
Chapter 1 Introduction	1
1.1 Significance of the study.....	1
1.2 Research limitations.....	3
1.3 Theoretical framework.....	4
Chapter 2 Article.....	6
2.1 Introduction.....	6
2.2 Literature Review.....	7
2.2.1 What is technical vocabulary?	7
2.2.2 Research on the technical vocabulary of different disciplines.....	8
2.2.3 How to identify technical vocabulary?	10
2.2.4 How should teachers and students select newspaper articles to read?.....	11
2.3 The Present Study	12
2.4 Methodology	12
2.4.1 Creating an American newspaper corpus	12
2.4.1.1 Source of the corpus.....	13
2.4.1.2 Organization of the corpus.....	13
2.4.2 Determining the technical vocabulary of an American newspaper	14
2.4.2.1 Unit of counting	14
2.4.2.2 Treatment of proper nouns.....	15
2.4.2.3 Three criteria for determining technical vocabulary.....	15
2.4.2.4 Validating the technical vocabulary of newspapers.....	16
2.5 Results.....	17

2.5.1 The technical vocabulary of an American newspaper and its lexical coverage	17
2.5.2 The technical vocabulary in different sections of a newspaper and their lexical coverage	18
2.5.3 Validation of the technical vocabulary	18
2.6 Discussion	20
2.6.1 Proportion of technical vocabulary in the NYT as a whole is relatively small	21
2.6.2 Diversity of number of technical words in newspaper sections	22
2.6.3 Composition of technical vocabulary of newspapers	23
2.6.4 Pedagogical implications	25
2.7 Limitations and Directions for Further Research.....	27
2.8 Conclusion	28
Chapter 3 Conclusion	29
3.1 Research findings.....	29
3.2 Research implications	29
References.....	31
Appendices.....	36
Curriculum Vitae.....	85

List of Tables

Table 1. Organization of the newspaper corpus.....	14
Table 2. Examples of the technical vocabulary of The New York Times.....	17
Table 3. The technical vocabulary of the seven newspaper sections.....	18
Table 4. Coverage of the technical vocabulary of a newspaper in corpora made up of different discourse types.....	20
Table 5. Composition of technical vocabulary of seven newspaper sections and newspapers as a whole.....	24
Table 6. Examples of high, mid and low frequency technical words for each section and newspapers as a whole.....	25

List of Appendices

Appendix A. The technical vocabulary of the NYT as a whole	36
Appendix B. The technical vocabulary of world news.....	40
Appendix C. The technical vocabulary of business news.....	47
Appendix D. The technical vocabulary of sports news	54
Appendix E. The technical vocabulary of politics news.....	59
Appendix F. The technical vocabulary of technology news.....	65
Appendix G. The technical vocabulary of U.S. news.....	72
Appendix H. The technical vocabulary of arts news	79

Chapter 1 Introduction

The present study aimed to identify the technical vocabulary of newspapers as a whole and the technical vocabulary of seven newspaper sections with different topics: politics, business, sports, U.S. news, world news, arts, and technology. A seven-million-word newspaper corpus containing newspaper articles from *The New York Times* was created. The corpus was made up of seven sub corpora according to the seven sections. The lexical coverage and composition of the technical vocabulary of newspapers were analyzed in this study. Lexical coverage refers to the percentage of known words in spoken or written text (Adolphs & Schmitt, 2003). Through the analysis, this study should provide some direction to language learners about how to effectively learn vocabulary through reading newspapers.

1.1 Significance of the study

It is useful to investigate the vocabulary in newspapers, because research indicates that second language learners can learn vocabulary through reading newspaper articles (Kyongho & Nation, 1989; Sternfeld, 1989; Schmitt & Carter 2000). Newspapers are often used as language learning material, because of their useful features. For example, both print newspapers and electronic versions of newspapers from websites are easily available around the world. Most students are likely to have read newspapers and be familiar with the style and organization of newspaper texts. Newspapers often provide extra lingual cues to meaning such as photographs and tables, thus making comprehension easier. If learners have already read newspaper articles in a specific section, then they may have enough background knowledge to support them to continue reading the articles about the same topic.

Distinguishing the technical vocabulary of one specific discipline may be particularly useful for learners who have specific learning goals to learn and use language from that area. Technical vocabulary is a collection of words that are closely associated with a particular area, and some technical words may be unknown to some readers who are not familiar with the area (Nation, 2013). Research showed that technical vocabulary makes up a large proportion of the words in a technical text (Chung & Nation, 2003; Chung & Nation, 2004). It is helpful for learners who are specialized in one discipline to learn the technical vocabulary in this area. It could help to lighten the proportion of unknown words, increase the comprehension level when

reading and listening, thus facilitating language learning. Knowing the technical vocabulary also could be the foundation of language use in that area. Nation (2013) suggested that knowledge of vocabulary enables language use. Knowing abundant technical vocabulary of one subject provides the foundation for understanding language and writing or talking about this topic with others.

Identifying the technical vocabulary of newspapers is significant for language learners and teachers. The technical vocabulary of newspapers is likely to be a useful language learning tool. For students, learning the technical vocabulary in advance may lighten the vocabulary load to some extent and increase the background knowledge or newspaper articles, thus making comprehension easier. For teachers, they can make use of the technical vocabulary of different sections to test learners' vocabulary level, in order to help them to choose the section where they know the most words to read.

Identifying the technical vocabulary of seven newspaper sections could also provide support to the use of a narrow reading approach when reading newspapers. One important feature of newspapers is that newspaper articles have various topics and talk about different things. When reading newspaper articles, learners could choose to read articles randomly regardless of the topic, or choose to read articles having the same topic (narrow reading). This study analyzed and compared the technical vocabulary of seven newspaper sections, to determine whether the technical vocabulary in different sections is indeed different. Reading newspapers in the same section may be a more effective reading method to learn language. Moreover, Krashen (2004) suggested that narrow reading could potentially increase the motivation for language learning. Research has demonstrated that motivation plays an influential and positive role in the acquisition of vocabulary (Gardner & MacIntyre, 1991; Mizumoto & Takeuchi, 2009; Tseng & Schmitt, 2008; Tanaka, 2014).

The creation of an English newspaper corpus is not without precedent. Currently, there are several corpora of newspapers. For example, The Corpus of Nineteenth-Century Newspaper English (CNNE) was compiled by Erik Smitterberg, funded by the Royal Swedish Academy of Letters, History and Antiquities, with financial support from the Knut and Alice Wallenberg Foundation (Smitterberg, 2014). Two hundred texts for a corpus made up of 320 thousand words were selected for the online database: 19th Century British Library Newspapers. The Zurich English Newspaper Corpus (ZEN) is a 1.6-million-word collection of newspapers in Early

English, covering 120 years (from 1671 to 1791) of British newspaper history (Schneider & Patrick, 1999). In 2000, Reuters released a corpus of Reuters News stories for use in research and development of natural language-processing, information-retrieval or machine learning systems (Rose, Stevenson & Whitehead, 2002). It contains about 810,000 Reuters, English Language News stories. However, there is not a comprehensive newspaper corpus that has been derived from a critically acclaimed English newspaper. This research aims to create such a corpus to fill this gap.

1.2 Research limitations

Because the corpus was created with *The New York Times* articles, the word list created in this research will consist of American English with the language habits of the United States. However, it is not clear if the word list would be consistent with those developed from newspapers in other American regions. In addition, one can assume a certain amount of deviation when compared to word lists created from British, Australian or Canadian newspapers.

The oldest newspaper archive is from 1851. For the purpose of this research, the corpus created only covers around 8,000 articles from 2015 and 2016, and is roughly seven million words in total. *The New York Times* website is updated frequently, usually several times in a given day. Thus the contents are constantly growing and being updated. Due to the ever increasing content, this word list will be less applicable as we move forward in time.

In addition, the two non-newspaper corpora used to do the comparison in the validation of the lists both consist of fictional stories. Both the novels in The Corpus of English Novels (CEN) and the movies in Webb and Rodgers (2009a) movie corpus were created by writers to describe stories that are fiction. Including a corpus that consisted of non-fiction text as well as the two fictional corpora may have increased the validity of the comparison.

The research will be conducted with the understanding of the above limitations. In the future, the corpus would benefit with updates from various newspaper resources with a much larger geographical focus. It would also be useful in making the newspaper corpus a living database, updated periodically as new content becomes available to ensure that it reflects vocabulary as time progresses. In the validating test, a non-fiction comparison corpus such as a course book corpus and a spoken English corpus should also be included.

1.3 Theoretical framework

The present study is a corpus-based study. Generally, a corpus is a collection of texts that are stored in a computer. Nowadays, the corpus is often used to refer to a digital text collection in a computer file. Corpus-based study is a research method that uses corpora to support a hypothesis or a theory. Corpus linguistics is a collection of methods for studying language via a corpus (Lancaster, 2014). It is the analysis of the sample of one language type on the basis of computerized corpora. Usually, the analysis is performed with the help of the computer, usually with specialized software. In this kind of research, one or many corpora would be created, then the texts stored in the corpora would be analyzed with the help of some specialized software according to the research aim.

Corpora have been commonly used in language learning in recent years. As noted by Leech (1997), there are three areas where corpora can be used for linguistic analysis: language descriptions from a corpus, language analysis of a corpus in the classroom, and learner corpora. Language descriptions from a corpus means that language in a corpus can be used to inform learning in the classroom or learning materials. For example, dictionaries, textbooks and workbooks are all learning materials that are often developed from various corpora. Language analysis of a corpus in the classroom is using the corpora in the classroom as a kind of learning tool to study. Learner corpora is creating a corpus through collecting and analyzing language learners' data. Analyzing this kind of corpora could help to reveal language learning processes and improve language learning. In this research, one large newspaper corpus consisting of various newspaper articles from *The New York Times* website was created. This newspaper corpus was analyzed to identify the technical vocabulary of newspapers.

This study was designed to examine the principle of narrow reading. Narrow reading means reading related texts with the same topic instead of reading unrelated texts. It has been shown to be a method of making reading easier and helping learning (Cho, Ahn & Krashen, 2005; Hwang & Nation, 1989; Kang, 2015; Schmitt & Carter, 2000). Narrow reading could provide rich exposure to related vocabulary and contexts, and this kind of narrow input is more efficient for second language acquisition (Krashen, 1989). Input refers to the target language that language learners are exposed to from various sources such as reading and listening. When reading a series of related texts about one same topic, readers are likely to gain more background

knowledge, meet fewer different words and more repeated words. In the present study, the technical vocabulary of seven different newspaper sections was determined. The analysis of the difference in the technical vocabulary in seven sections may reveal whether the principle of narrow reading strategies could be applied when reading newspapers.

Chapter 2 Article

2.1 Introduction

Newspapers are a valuable resource for language learning. They are considered to be interesting reading material that can be used to learn language (Schmitt & Carter, 2000). Sternfeld (1989) listed several beneficial features of using newspapers for language learning. First, students are likely to be familiar with the characteristics and organization of newspaper articles. Second, newspapers often provide extra lingual information that can be used to derive meaning such as photographs and tables that may help readers to better understand content. Third, the news reported in L2 newspapers is likely to be similar to that reported in their first language, which allows learners to bring a fair amount of background knowledge to the L2 reading. In addition, learners are likely to be familiar with the newspaper stories, because newspaper stories often report real world events. Finally, both print newspapers and electronic newspapers from websites, especially English newspapers, can be obtained very easily around the world. This may be one important reason why newspapers are frequently used as English language learning materials. Because of these features, newspapers are often used in language learning courses in order to develop reading skills and expand vocabulary knowledge (Hwang & Nation, 1989; Klinmanee & Sopprasong, 1997). Some research has indicated that second language learners can learn vocabulary through reading newspaper articles (Kyongho & Nation, 1989; Schmitt & Carter 2000; Sternfeld, 1989).

Technical vocabulary is a group of words that occur more frequently in one topic area than in other areas. Distinguishing one specific technical vocabulary from other vocabulary is useful for learners who have specific language learning goals, such as reading texts or writing technical reports about one specialized technical discipline (Nation, 2013). A list of the technical vocabulary of newspapers would therefore be a useful tool for language learners. Knowing the technical vocabulary of newspapers could help to lighten the vocabulary load of newspaper articles to some extent and perhaps help to gain useful background knowledge, thus making comprehension easier.

Identifying the technical vocabulary of different newspaper sections may reveal the best approach to select newspaper articles to be used for learning language. Newspapers are widely used in language learning by teachers and students. For example, some newspaper articles are

frequently selected in English course books as learning materials. Newspapers are also likely to be popular reading materials outside of the classroom. Because newspapers include a wide range of topics such as politics, technology, business, arts, and sports, they are divided into different sections made up of articles about related issues. Newspaper articles might be selected for language learning in two ways: selecting articles according to interest regardless of the topic or section, or selecting related articles from the same section. Reading related texts about the same topic is called narrow reading. Kyongho and Nation (1989) analyzed the vocabulary in four related newspaper articles and four unrelated articles, and found that related newspaper articles included fewer different words, provided more repetition of words, and suggested that these features were likely to make reading easier. By identifying the technical vocabulary of different newspaper sections, this study should provide a useful starting point to reading newspaper articles from each section. Moreover, by comparing the technical vocabulary of different sections and all articles from one newspaper, the research may indicate if reading articles from a single section is a more useful language learning method than reading unrelated articles.

The aim of the present study is to determine the technical vocabulary of newspapers. A large newspaper corpus containing articles from *The New York Times* (NYT) was developed for this purpose. This corpus was made up of seven sections with different topics: politics, business, sports, U.S. news, world news, arts, and technology. Determining the technical vocabulary of newspapers as a whole and the technical vocabulary of each of these sections may provide language learners and teachers with a useful language learning tool. Comparing the technical vocabulary in different sections is important, because it may provide direction towards choosing appropriate newspaper texts to read, and indicate how to effectively use newspapers for language learning. Moreover, analyzing and comparing the words in the seven sections of technical vocabulary could help language learners to better understand the lexical challenges that they may have when reading newspaper articles in seven sections.

2.2 Literature Review

2.2.1 What is technical vocabulary?

Nation (2013) classified vocabulary into three groups according to the frequency of words in modern texts: High frequency words, mid frequency words, and low frequency words.

He also identified two kinds of specialized vocabulary: technical vocabulary and academic vocabulary. Technical vocabulary is a collection of words that are used more frequently in one specialized discipline rather than in other areas (Chung & Nation, 2003). Technical vocabulary is closely related to one specific subject, and may require learners to have specialist knowledge to understand it (Chung & Nation, 2004). Learning technical words therefore plays an important role in learning about a particular discipline. For instance, words such as *acute*, *chronic*, *disease*, and *diagnose* that are used frequently when talking or writing about medical issues are technical words of medicine. Whereas, *fry*, *sear*, *spatula* and *whisk* are the technical words of cooking because they are used frequently when talking or writing about how to cook.

Technical vocabulary is different from academic vocabulary, because it is typically associated with just one discipline while academic vocabulary is used frequently in a wide range of academic materials (Chung & Nation, 2003). For example, academic words such as *goal*, *hence*, and *error* are common to a wide range of academic fields. There has been some research on academic vocabulary and creating academic word lists (Coxhead, 2000; Gardner & Davies, 2013; Nation & Coxhead, 2001). However, some academic words can serve as technical words in a certain genre of text. Sutarsyah, Nation and Kennedy's (1994) research highlights the fact that some high frequency words and academic words are used frequently to talk about specific subjects and play the function of technical vocabulary in specific subject areas. Sometimes, academic vocabulary in one specific discipline can be regarded as technical vocabulary in this area. For example, some words in the Academic Vocabulary List (Gardner & Davies, 2013) such as *function*, *condition*, *system*, *analysis* and *result* are used frequently in academic materials. They are also likely to be used more frequently in engineering texts than other texts and were defined as items in the technical vocabulary of engineering (Ward, 2009).

2.2.2 Research on the technical vocabulary of different disciplines

One earlier study by Chung (2009) involved the creation of a word list designed to represent the technical vocabulary of newspapers. To ensure that the technical words in this list were likely to be unknown to learners from a range of proficiency levels, lexical items from the most frequent 2000 word families were not included for selection. The technical vocabulary of newspapers accounted for 6.8% of the words in the newspaper corpus. One limitation of this study was that the corpus used to identify the technical words was relatively small. Sinclair

(1991) reported that a corpus should include millions of running words to ensure that the sample of language adequately represents the discourse type that is being examined. Chung's newspaper corpus consisted of 579,849 running words, of which 588 words were classified as newspaper words. A larger corpus would allow for a more representative sample of the language of newspapers, and a more representative technical vocabulary.

There are many studies that have focused on identifying the technical vocabulary of different disciplines. Chung and Nation (2003) identified the proportion of technical vocabulary in specialized texts. They chose two subject areas: anatomy and applied linguistics. They identified 4,270 technical words of anatomy which accounted for 37.6% of the total words in an anatomy text, and 835 technical words of applied linguistics which made up 16.3% of an applied linguistics text. Konstantakis (2007) investigated the technical vocabulary of business. Because the focus of the research was to determine the most useful words for language learners who planned to study business, he did not include any high frequency words in his list of technical vocabulary. Konstantakis identified 560 technical words of business within a corpus of 33 Business English course books consisting of 600,000 running words. These words represented 2.79% coverage of the corpus. Fraser (2007) identified 610 technical words of pharmacology from a 185,000-word pharmacology corpus. These technical words accounted for 12.91% of the running words in the corpus. The technical vocabulary of pharmacology also excluded high frequency words. Coxhead and Hirsch (2007) did a pilot study to identify technical vocabulary of science and found that 318 mid and low frequency words covered 3.79% of the 1,761,380 running words in a science corpus. Yang (2014) identified 676 technical words of nursing that were derived from a 1,006,934-word nursing corpus. The coverage of this list in the nursing corpus was 13.64%. Lei and Liu (2016) created a 2.7 million-word corpus of medical texts and identified 819 technical items. These technical medical items accounted for 19.44% of the words in the corpus and 20.18% of the vocabulary in a second corpus of medical texts.

Taken together, these studies reveal that there is typically a relatively small technical vocabulary of a discipline that provides a large amount of lexical coverage. The value in determining the technical vocabulary of the different areas is that learning these words provides a means for learners to gain control of very useful words that will likely help them to better understand the subject area.

2.2.3 How to identify technical vocabulary?

Although it is important to identify the technical vocabulary for language learning, there is not an agreed upon approach to determining which words are technical items and which words are not. Chung and Nation (2003) described four approaches to identifying technical vocabulary: Using a rating scale, using a technical dictionary, using clues provided in the text, using a computer-based approach. The rating scale approach is to identify the meanings of words. The words whose meanings are closely related to the specialised discipline would be identified as technical vocabulary. However, there is hardly any research using this approach. The second way to determine technical vocabulary is to ask experts to identify technical vocabulary or to look up items in technical dictionaries. One problem with this approach is that the experts are not always available, and there may not be technical dictionaries for some subjects. The third way is to use some clues in the texts provided by writers (i.e., definition of words) to identify the technical vocabulary. Although some texts use some signals to reveal the technical words, it is not a consistent feature among all texts. It is also challenging to pick out all the technical words through examination of materials. The final approach to identifying technical words involves using software to look for words that are specific to a discipline. This statistical approach involves finding words that occur more frequently and are regularly distributed within the technical corpus than in the comparison non-technical corpus.

The present study used the statistical approach to identify the technical vocabulary of newspapers. It is the most commonly used approach to determining technical vocabulary (i.e., Chung, 2009; Coxhead & Hirsch, 2007; Fraser, 2007; Konstantakis, 2007; Yang, 2014). The criteria used to identify technical words using the statistical approach has varied slightly between studies. For example, in Coxhead and Hirsch's (2007) study, they used the criteria of range, frequency, and dispersion to determine the technical vocabulary of science. Whereas, Lei and Liu (2016) used frequency, ratio and dispersion to determine the technical vocabulary of medicine, and Yang (2014) used two criteria to identify the technical vocabulary of nursing: range and frequency. In the present study, minimum frequency, ratio and dispersion were selected as the criteria to select technical words. These three criteria were chosen because they are well-established and effective filter criteria, and were commonly used in other research to identify specialized vocabulary.

2.2.4 How should teachers and students select newspaper articles to read?

When reading texts to learn language, learners can choose to read related texts about the same topic or read unrelated texts. Reading a series of texts about one specific topic is called narrow reading. Krashen (2004) advocated the use of narrow reading as a means to learn vocabulary. The strength of a narrow reading approach is that technical words are likely to be repeatedly encountered within and between texts. This provides greater potential for vocabulary learning than there would be through reading unrelated texts.

Corpus-driven research comparing the vocabulary in related and unrelated texts provides support for Krashen's suggestion. For example, Hwang and Nation (1989) analyzed 20 groups of related and unrelated newspaper articles. They found that reading related texts provided more encounters with words outside the 2,000 most frequent words, thus helping to reduce the lexical burden required to understand the text, and providing better conditions for learning lower frequency words. Schmitt and Carter (2000) focused on the vocabulary in two different sets of newspaper articles: a series of reports about the same topic and a collection of unrelated articles. The two sets of articles contained the same number of running words. They found that the related texts contained fewer different words, and these words were repeated more often in the related articles. Schmitt and Carter suggested that narrow reading may improve reading comprehension by lowering the lexical load required of the learner.

Empirical research indicates that narrow reading may have a positive impact on vocabulary learning. Cho, Ahn and Krashen (2005) had 37 students read a series of related stories over three months, and then complete a vocabulary test and fill out a short questionnaire. They found that learners' interest and confidence in reading improved drastically, and they made significant vocabulary gains after narrow reading. Kang (2015) also found that narrow reading contributed to learning the meanings of vocabulary encountered in related texts. The ability of students to appropriately use these words also improved after narrow reading.

In the present study, a corpus was made up of seven sections from the NYT: politics, business, sports, U.S. news, world news, arts, and technology, and the technical vocabulary of each section was identified. The studies on narrow reading indicate that reading texts which relate to the same topic are likely to be more effective for vocabulary learning. Thus, identifying the technical vocabulary of each section may have greater value to learners than identifying the technical vocabulary of a newspaper as a whole. A comparison of the lexical coverage of the

technical vocabulary of the NYT and each of its seven sections may provide some indication of the most useful approach to using newspapers for language learning.

2.3 The Present Study

This study aims to create a corpus that is representative of articles in *The New York Times*, and identify the technical vocabulary of newspaper articles in NYT. The research addresses the following four research questions:

1. How many word families make up the technical vocabulary of a newspaper?
2. What is the lexical coverage of the technical vocabulary from a newspaper?
3. How many word families make up the technical vocabulary from different newspaper sections?
4. What is the lexical coverage of the technical vocabulary from different newspaper sections?

The first research question focuses on the identification of the technical vocabulary of the NYT. The research explores whether there are words that are more common in newspapers than in other discourse types. Once the technical vocabulary was identified, further analysis was conducted to identify the lexical coverage of these words in the corpus. This activity aims to provide the answer for the second research question. In addition, the technical vocabulary of seven different sections of the NYT was identified. This indicated the most useful words to know in different newspaper sections rather than in the NYT as a whole, and provides the answer for the third research question. After identifying the technical vocabulary of the different newspaper sections, their lexical coverage was determined to provide some indication of the value of these lists of items to language learners.

2.4 Methodology

2.4.1 Creating an American newspaper corpus

To determine the technical vocabulary of an American newspaper, a corpus was created that was large enough to be representative of a newspaper as a whole and each of its sections. The corpus that was created for this study consisted of 7,644 newspaper articles posted to *The*

New York Times website between June, 2015 and October, 2016. The dates for the articles were chosen to ensure that the corpus represented current language.

2.4.1.1 Source of the corpus

Articles from *The New York Times* were selected to be the source of texts for the corpus because of their potential as a source of learning for English language learners. *The New York Times* is one of the best known newspapers in the world, and has wide geographic coverage and influence. It was the third most read newspaper in the world after the *Daily Mail* and *The Guardian* in 2016 in a survey by Trending Top Most (Top 10 most read newspapers in the world, 2016). It also topped the 2016 Newspaper Web Rankings (2016 Newspaper web rankings, 2016). In addition, it includes a large number of sections about a variety of topics. Abundant topics and accurate classification of news made it possible to choose seven common sections of newspapers to include in the corpus.

2.4.1.2 Organization of the corpus

Articles were selected from the following seven sections of *The New York Times*: politics, business, sports, U.S. news, world news, arts, and technology. These sections were chosen because they are common among American newspapers. For example, three other well-known American newspapers: *The Wall Street Journal*, *The Washington Post*, and *USA Today* all include each of these seven sections. The corpus was divided into seven sub corpora according to each of these sections. Each sub corpus was made up of approximately one million running words. Table 1 shows the organization of the corpus.

Table 1. Organization of the newspaper corpus

Section	Number of articles	Publication date	Running words
World news	1,150	Nov. 2015—Aug. 2016	1,001,608
Business	1,106	Dec. 2015—Sep. 2016	1,017,607
Sports	1,100	Oct. 2015—Aug. 2016	999,675
Politics	988	June 2015—Sep. 2016	1,026,323
Technology	1,150	June 2015—Oct. 2016	1,028,678
U.S. news	1,150	June 2015—Sep. 2016	1,0029,37
Arts	1,000	June 2015—Oct. 2016	1,058,776
Total	7,644	June 2015—Oct. 2016	7,135,604

2.4.2 Determining the technical vocabulary of an American newspaper

After creating the newspaper corpus, two methodological issues needed to be considered when selecting technical words: the unit of counting and the treatment of proper nouns.

2.4.2.1 Unit of counting

An important issue when determining technical vocabulary is deciding what to count as a word. In this study, the word family was the unit of counting. A word family consists of a headword, its inflected forms and its closely derived forms (Nation, 2011). For example, members of the word family for the headword *agree* include *agreed*, *agreeing*, *agreement*, *agreements*, *agrees*, *agreeable*, *agreeably*, *disagree*, *disagrees*, *disagreed*, *disagreeing*, *disagreement*, *disagreements*, *disagreeably*.

Nation and Webb (2011) suggested that the most appropriate unit of counting for written text is the word family, because if learners know one member of a family, they may be able to recognize and understand other members of the family. Although some words belonging to the

same word family may be morphologically distinct from each other, they are strongly related in many ways (Nation, 2013). For example, if readers know the word *agree*, they might be able to interpret an unknown derivation such as *agreement* when it is encountered if they can understand the context in which it occurs.

Nation (2006) reported that readers would need to know the most frequent 8000 to 9000 word families to comprehend newspapers. This is a relatively large vocabulary size for L2 learners to attain, thus most students learning English through reading newspapers might be higher proficiency language learners. These readers are likely to already have control of basic word-building processes, so comprehending the meaning of regularly inflected forms or closely derived forms of a word family may not require much effort (Bauer & Nation, 1993).

2.4.2.2 Treatment of proper nouns

Proper nouns are those nouns which are marked with an initial capital letter, and they include personal names (i.e. Clinton, Trump), geographical names (i.e. Australia, Canada), names of objects (i.e. Drumbeat <a boat>), or institutions (i.e. Bank of Montreal) (Biber, Johansson, Leech, Conrad & Finegan, 1999). Nation (2013) reported that readers can understand a sentence where there are some unknown proper nouns well enough even though they have only partial knowledge of these proper nouns. In this research, all the proper nouns were regarded as known words for readers. This approach has been applied in many corpus-driven studies of lexical coverage (i.e. Nation, 2006; Webb & Paribakht, 2015; Webb & Rodgers, 2009a, 2009b), because of the likelihood that more advanced learners are likely to understand proper nouns with little difficulty. Proper nouns were therefore not selected as technical words.

2.4.2.3 Three criteria for determining technical vocabulary

There were three criteria used to distinguish the technical vocabulary of newspapers: frequency, ratio, and dispersion.

Frequency: The measure of minimum frequency was used to ensure that the technical words should be of high frequency in the newspaper corpus. Coxhead (2000) used the frequency threshold of 100 occurrences in a 3.5 million-word corpus, or 28.57 times per million words, to select items for The Academic Word List. Lei and Liu (2016) also used the same threshold for their medical word list. This figure was also used in this research, and so selected word families

had to occur at least 200 times in the seven-million-word corpus. When selecting the technical items for each of the seven sections of the newspaper, the word families had to occur at the same proportional frequency; at least 29 times in each of the sub corpora.

Ratio: After determining potential technical items in the first step, the frequency of these word families in the newspaper corpus was then compared with their frequencies in other non-newspaper corpora to determine their ratio. The ratio criterion indicates that potential items are more likely to occur more frequently in newspaper articles than in other forms of text. The Corpus of English Novels (CEN), compiled by Hendrik De Smet was used for the comparison. To meet the ratio criterion, the frequency of each word family had to be at least 50% higher (1.5: 1) in the newspaper corpus than in CEN. Gardner and Davies (2014) performed extensive experimentation with this ratio before adopting the 1.5: 1 ratio as one criterion for selecting items for their Academic Vocabulary List. They observed that too high of a figure (i.e., 2.0) would cause the loss of many useful words, and too low a ratio would lead to the inclusion of too many general high-frequency words.

Dispersion: Dispersion was included as the third criterion to ensure that the technical words appeared evenly in the corpus. Dispersion ensures that words that are very frequent in one part of the corpus but are infrequent in other parts were not selected as technical words. Juilland's D (Juilland, Brodin, & Davidovitch, 1970) was used to measure the dispersion of word's sub frequencies over N equally-sized subcategories of the corpus. In this research, the dispersion of 0.8 was used as the threshold. Gardner and Davies (2014) used this figure to select items for the Academic Vocabulary list. They also completed repeated tests on their data and found that 0.8 was the most appropriate dispersion for selecting words.

2.4.2.4 Validating the technical vocabulary of newspapers

After creating lists of technical words that met the three criteria for selection for the corpus and each section, the validity of the lists was then tested. Validity tests provide some indication of the value of each list as a whole (Liu & Han, 2015). This was done by comparing the lexical coverage of the technical word lists in the newspaper corpus and two non-newspaper corpora. The two non-newspaper corpora were: The Corpus of English Novels (CEN) and Webb and Rodgers (2009a) movie corpus. CEN, compiled by Hendrik De Smet, consists entirely of novels, written by twenty-five novelists. All novels are written between 1881 and 1922. It

contains roughly 26 million running words. Webb and Rodgers (2009a) movie corpus consists of 2,841,887 running words from the scripts of 318 movies. All the English movies in the corpus were from the following genres: action, animation, comedy, crime, drama, horror, romance, science fiction, war, western, and classic. The classic movies were released in 1955, and the other genres of movies were released from 1991 to 2001.

2.5 Results

2.5.1 The technical vocabulary of an American newspaper and its lexical coverage

In answer to the first research question, a total of 405 word families were extracted from the total newspaper corpus and identified as the technical vocabulary of *The New York Times*. In the first step, 2,830 word families met the frequency criterion of at least 200 occurrences in the corpus. The second criterion (ratio) eliminated about half of these word families. There were 1,558 word families that met the first two criteria. After the third criterion (dispersion) was applied, there were 405 word families remaining that made up the technical vocabulary of the newspaper. Table 2 shows examples of the technical words and their frequency of occurrence in the corpus. In answer to the second research question, the 405 word families occurred 696,176 times and accounted for 9.76% of the corpus.

Table 2. Examples of the technical vocabulary of The New York Times

Five most frequent words	Number of occurrences	Five least frequent words	Number of occurrences
Year	22,526	Underscore	212
New	17,808	Equivalent	210
Work	13,693	Counterpart	208
People	12,870	Vacation	208
Also	12,701	Soar	206

2.5.2 The technical vocabulary in different sections of a newspaper and their lexical coverage

In answer to the third research question, on average there were 748 word families that met the three criteria and were selected as technical vocabulary for each newspaper section. Table 3 lists the number of technical words, their frequencies, and their lexical coverage in each of the seven sections. The technical vocabulary of the sports section was made up of the fewest word families (534). The world news section consisted of the most technical vocabulary (859). On average, the technical vocabulary of each newspaper section occurred about 242,582 times in that section.

In answer to the fourth research question, the average lexical coverage of the technical vocabulary of each section was 23.82%. The smallest amount of coverage was provided by the technical vocabulary derived from the arts section (18.81%), while the technical vocabulary derived from the business section provided the most coverage (27.19%).

Table 3. The technical vocabulary of the seven newspaper sections

Section	Number of word families	Number of occurrences in this section	Coverage in this section
World news	859	267,536	26.71%
Business	822	276,701	27.19%
Technology	820	261,265	25.40%
U.S. news	790	245,615	24.49%
Arts	707	199,131	18.81%
Politics	703	259,588	25.29%
Sports	534	188,240	18.83%

2.5.3 Validation of the technical vocabulary

A validity test was done to determine whether the technical vocabulary is what it was claimed to be—a reliable list of newspaper vocabulary rather than high-frequency vocabulary.

Table 4 shows the coverage of the technical vocabulary in three corpora made up of different discourse types: newspaper articles, movies, and novels.

The coverage of the technical vocabulary of the seven newspaper sections in the seven newspaper sub corpora was much higher than in the novel corpus and the movie corpus. For example, the technical vocabulary of business news accounted for 27.19% of the section from which it was derived. This was approximately four times its coverage of the movie corpus (6.79%). Its lexical coverage of the novel corpus was 5.56%.

The difference between the lexical coverage of the technical vocabulary of the newspaper as a whole in the three corpora was smaller than it was for technical vocabulary of the seven sections. However, the lexical coverage of the newspaper corpus was still approximately three times greater than of the comparison corpora. The technical vocabulary of the newspaper as a whole accounted for 9.76%, 3.18%, and 3.17% of the words in the newspaper, movie, and novel corpora, respectively. The large difference indicates that those words selected as technical vocabulary in the newspaper are most likely representative of the words in newspaper articles.

Table 4. Coverage of the technical vocabulary of a newspaper in corpora made up of different discourse types

Corpora	Coverage in newspaper sections	Coverage in movie corpus	Coverage in novel corpus
World news	26.71%	7.68%	7.31%
Business	27.19%	6.79%	5.56%
Sports	18.83%	8.19%	4.72%
Politics	25.29%	7.65%	6.13%
Technology	25.40%	7.08%	5.76%
U.S. news	24.49%	7.13%	6.27%
Arts	18.81%	5.03%	4.70%
All sections	9.76%	3.18%	3.17%

2.6 Discussion

The present research expanded on earlier studies by examining the vocabulary in a widely used discourse type for language learning that has not received much attention: newspapers. Earlier studies have looked at the vocabulary in course books (Groves, 2016; Harmon, Hedrick & Fox, 2000; Hsu, 2014), academic texts (Coxhead, 2000; Gardner & Davies, 2013), academic lectures (Dang & Webb, 2014; Dang, Coxhead, & Webb, 2017), English proficiency tests (Webb & Paribakht, 2015), graded readers (Nation & Wang, 1999; Waring &

Takaki, 2003; Udorn, 2008; Webb & Macalister, 2013), movies (Webb, 2010a; Webb & Rodgers, 2009a), and television (Rodgers & Webb, 2011; Webb, 2010b; Webb, 2010c; Webb, 2011; Webb & Rodgers, 2009b). Examining the technical vocabulary in newspaper sections has great value because it may provide some indication of the lexical challenge that learners may have when reading newspapers; might indicate the best approach to learning with newspapers; and the items identified as technical words may help readers to prepare to study with newspapers.

2.6.1 Proportion of technical vocabulary in the NYT as a whole is relatively small

The results indicated that the number of technical words in newspapers as a whole may be relatively small. There were 405 word families that were identified as the technical vocabulary of the NYT. These words accounted for 9.76% of the running words in the NYT corpus. This figure is lower than the lexical coverage of technical vocabulary found in other areas. For example, Chung and Nation (2003) identified 37.6% of the words in an anatomy text and 16.3% of the words in an applied linguistics text as being technical. Similarly, a word list containing the technical vocabulary of nursing provided 13.64% coverage of a nursing corpus (Yang, 2015), while a list of the technical vocabulary of medicine accounted for 19.44% and 20.18% coverage of two medical corpora (Lei & Liu, 2016).

The number of technical words in the NYT as a whole was also smaller than the number of technical words in each of the seven newspaper sections. There was an average of 748 word families in the technical vocabulary of each newspaper section that accounted for 23.82% of the running words of the sections. The technical vocabulary of the arts section had the smallest lexical coverage of the seven sections (18.81%). However, this figure was still almost twice the lexical coverage of the technical vocabulary of the NYT as a whole.

The reason for the difference in the number of technical words in the NYT and in each section is that a complete newspaper includes a wide range of topics. Unlike most other kinds of texts, the topics of newspaper articles are continually changing, and often topics are not related to each other. Newspaper sections help to organize the topics around those that are most likely to relate to each other. The findings indicated that vocabulary in the seven sections is quite different. The methodology adopted in this study provides a clear way of showing the variation in words used in the different sections. Some words were not identified as technical vocabulary,

because they only occurred frequently in only one or two sections instead of occurring evenly in all seven sections. For example, *computer* occurred 1,275 times in the technology section. However, in the other six sections combined, it occurred only 85 times. Thus, while *computer* is an important word to know when reading the technology section, it is far less important when reading the other sections.

2.6.2 Diversity of number of technical words in newspaper sections

The results also revealed that the number and proportion of technical words in the seven sections are quite different from each other. One interesting finding was that there were fewer words in the technical vocabulary of sports news. There were only 534 technical words of sports news, while there are at least 703 words in the technical vocabulary of the other six newspaper sections. The section about world news had the most technical words (859 words).

The reason why the sports section had relatively few technical words was that sport events tend to change over the seasons. For example, the regular season for Major League Baseball is from April to October; The National Football League regular season starts in September and ends in December; The regular season for the National Basketball Association is from November to April. Thus, during the baseball season, newspapers are likely to intensively report on baseball, and the varying aspects of that game and its players. However, in baseball's off-season, the vocabulary in sports articles is more likely to reflect the other sports that are being played at that time, and many of the technical terms common to baseball may be used rather infrequently. In the NYT corpus, all the articles were organized and arranged in reverse chronological order. Because of the seasonal nature of sports, some specialized words relevant to one kind of activity were excluded from the technical vocabulary of the sports section because of their lower dispersion and frequencies. For instance, *wrestle* occurred 46 out of 63 times, and *gymnastics* occurred for 117 out of 157 times between December 2015 and September, 2016 in the lead up to and just after the Olympics. Although there are likely to be similar instances of technical terms being seasonal in nature, the topic of sports appeared to be affected by this much more often than the other topics of the other sections.

2.6.3 Composition of technical vocabulary of newspapers

It is useful to look at the lexical profile of the technical words identified in this study. A lexical profile shows the proportion of items that are found at different word frequency levels. Almost half of the words in the technical vocabulary of the seven sections and the NYT as a whole are mid frequency words (the most frequent 3,000-9,000 word families), and less than 1% of the words are low frequency words (words less frequent than the most frequent 9,000 word families). Table 5 shows the lexical profile of the technical words in each section and the NYT as a whole. For the technical vocabulary of the NYT as a whole, 63.45% of the items were high-frequency words and 36.54% of the words were mid frequency words. The technical vocabulary of seven newspaper sections has similar profiles. On average, about 60.52% of the technical words for the sections were high frequency words, 39.17% of the words were mid frequency words, and 0.31% were low frequency words. The technical vocabulary from the world news section included the largest proportion of mid frequency words (43.53%), while the technical vocabulary of the sports section had the smallest proportion of mid frequency words (30.52%). The relatively high percentage of mid frequency words in each section suggests that there are likely to be a reasonable number of these words that are unknown to beginner and intermediate level learners. This suggests that lists of these technical items might be useful learning tools for the majority of language learners.

Table 6 listed a few high, mid, and low frequency technical words for each section and the newspaper as a whole. Examples of mid frequency technical words for the whole NYT corpus are *navigate*, *factory*, *legacy*, and *scrutiny*. Examples of mid frequency technical words from the technology section are *corporate*, *innovate*, *neural*, and *sensor*, and low frequency words for the technology section are *blog*, *Fahrenheit*, and *oculus*. Research suggests that the majority of EFL learners are unlikely to master the high frequency words (Danelund, 2013; Nurweni & Read, 1999; Webb & Chang, 2012), so also most mid frequency and low frequency technical words identified in this study might be unfamiliar words for EFL learners when reading. Learning the technical words found in newspapers will help to increase lexical coverage, reduce the lexical burden, and potentially make comprehension of newspapers easier (Hu & Nation, 2000; Schmitt, Jiang, & Grabe, 2011).

Table 5. Composition of technical vocabulary of seven newspaper sections and newspapers as a whole

Word list	World news	Business	Sports	Politics	Technology	U.S. news	Arts	All sections
1,000	213 24.80%	221 26.89%	202 37.83%	193 27.45%	235 28.66%	229 28.99%	187 26.45%	119 29.38%
2,000	271 31.55%	262 31.87%	169 31.65%	224 31.86%	262 31.95%	264 33.42%	214 30.27%	138 34.07%
3,000	293 34.11%	279 33.94%	127 23.78%	229 32.15%	259 31.59%	238 30.13%	204 28.85%	135 33.33%
4,000	52 6.05%	38 4.62%	19 3.56%	33 4.69%	35 4.27%	37 4.68%	51 7.21%	9 2.22%
5,000	16 1.86%	12 1.46%	5 0.94%	15 2.13%	13 1.59%	15 1.90%	13 1.84%	2 0.49%
6,000	10 1.16%	3 0.36%	4 0.75%	1 0.14%	0 0%	3 0.38%	13 1.84%	1 0.25%
7,000	3 0.35%	5 0.61%	2 0.37%	4 0.57%	7 0.84%	0 0%	10 1.41%	0 0%
8,000	0 0%	1 0.12%	3 0.56%	1 0.14%	3 0.37%	2 0.25%	8 1.13%	1 0.25%
9,000	0 0%	1 0.12%	3 0.56%	1 0.14%	1 0.12%	1 0.13%	3 0.42%	0 0%

Table 6. Examples of high, mid and low frequency technical words for each section and newspapers as a whole

	High frequency words	Mid frequency words	Low frequency words
World news	accept, crime, indicate, oppose	blast, dissent, plague, influx	anti
Business	advice, balance, commit, number	corporate, discount, global, outlet	
Sports	against, center, team, opportunity	basketball, host, hockey, victory,	
Politics	country, citizen, support, war	agency, secretary, ambassador, anonymity	anti, billionaire
Technology	button, machine, science, telephone	corporate, innovate, neural, sensor	blog, fahrenheit, oculus
U.S. news	center, concentrate, drug, university	data, dean, mall, passenger	anti
Arts	music, piano, television, gallery	bass, media, lyrics, rhythm	baritone, grammy, libretto
All sections	cart, discipline, experience, mail	navigate, factory, gulf, mall	

2.6.4 Pedagogical implications

The present study provides some direction on how newspapers might be effectively used to learn English. The results suggest that for language learners, working with the technical vocabulary from a single section of a newspaper makes sense, and may result in more effective learning. Not only were there a greater number of technical words in each newspaper section (an average of 748 word families) than in the newspaper as a whole (405 word families), but their lexical coverage of their corresponding sections was far greater (18.81%-27.19%) than for the technical words in newspapers as a whole (9.76%). There were a total of 5,235 technical words

identified in the seven sections combined. The reason for this is that each section of a newspaper is likely to discuss different topics using a large number of different words. Thus, learning English through reading articles from all of the different sections would be extremely challenging, because it would require comprehension of a very large number of words. This illustrates the value of using a narrow reading approach when reading newspapers. Earlier research has shown that narrow reading could help to lower the lexical load for L2 because it requires knowledge of a smaller number of words, and provides a greater number of encounters with the words that are encountered (Hwang & Nation, 1989; Sutarsyah, Nation & Kennedy, 1994; Schmitt & Carter, 2000). Reading related texts can also improve learners' interest and confidence in reading (Cho, Ahn & Krashen, 2005), help learners to better understand the meanings of unfamiliar words, and become more aware of the appropriate use of these words (Kang, 2015), thus facilitating vocabulary learning. By focusing on reading the articles from only one section, learners are likely to have better comprehension and more effective vocabulary learning using a narrow reading approach.

The results also indicate that there is value in collecting and organizing newspaper texts purposefully before language learners start to learn with newspapers. In EAP contexts, it may be clearly apparent that there is value in concentrating on the articles from certain sections such as finance, politics, and technology, because these fall within academic subject matter. However, learners could also choose the newspaper articles from the section that is closest to their interests, thus making reading more motivating. Research has demonstrated that motivation plays an influential and positive role in the acquisition of vocabulary (Gardner & MacIntyre, 1991; Mizumoto & Takeuchi, 2009; Tseng & Schmitt, 2008; Tanaka, 2014). As for teachers who plan to use newspapers for language teaching, it may be more appropriate for them to use a principled narrow reading strategy when selecting articles for their students instead of choosing articles of interest from different sections. This may contrast what is often done in the classroom. For example, some teachers may see value in giving students newspaper articles about different topics in order to expose students to diverse information and knowledge. Although this may broaden knowledge, this study reveals that it would also likely increase the number of different words that students would need to know, and increase the lexical burden required to understand the texts.

It is also useful to note that the technical vocabulary that was identified in this study might be a meaningful learning tool. Knowing the technical vocabulary from a section might provide the lexical foundation that helps students to more easily understand newspaper articles. The lexical coverage of the technical vocabulary from each section ranged from 27.19% to 18.81%. Learning these words in advance could help readers gain lexical knowledge that may lighten the vocabulary load to some extent. Teachers could also use the lists as a testing tool to help choose the newspaper section that is most appropriate for learning. For example, teachers could choose technical words from each of the seven sections and test their students' vocabulary knowledge of that section. The section where learners know the most words might be used as the source of reading material, because the students might be mostly able (at least lexically) to understand that section. For students who are interested in more than one topic, it may be difficult for them to decide which section they should read. However, looking at the lists of technical vocabulary found in the appendix, may allow them to determine the section in which they know the most technical words, and might be able to have better understanding. Moreover, they could subsequently work to learn the remaining unknown words in that list.

2.7 Limitations and Directions for Further Research

The present study may provide some indication of the vocabulary found in newspapers. The size of the corpus and sub corpora were much larger in this study than in Chung's (2009) earlier study. However, the corpus was created with only articles from *The New York Times*. Therefore, it is not clear whether the technical vocabulary is consistent with other newspapers such as *The Washington Post*, *The Wall Street Journal*, and *USA Today*. In future research, it would be useful to investigate the vocabulary from multiple newspapers. Because of the importance of having large corpora and sub corpora to ensure the occurrence of vocabulary was representative of a newspaper, it was beyond the scope of the present research to look at other newspapers. It would also be useful to investigate the vocabulary found in newspapers from other countries such as British newspapers (i.e. *Guardian* and *Daily Mirror*), Australian newspapers (i.e. *The Australian* and *Herald Sun*), and Canadian newspapers (i.e. *Toronto Star* and *The Globe and Mail*). This would indicate the extent to which the technical vocabulary in this research extended beyond the NYT. It would also be interesting to explore any differences in the technical vocabulary from different newspapers.

The NYT corpus in this research contained around 8,000 articles from 2015 and 2016 in order to ensure that it represented modern language. However, due to the ever changing content, the technical vocabulary in this research is likely to change through the years. For example, some words such as *hack*, *sensor*, and *web* that were identified as technical vocabulary of NYT were not common words as few as 30 years ago. This suggests that the technical vocabulary of newspapers may constantly change. Thus, there will be value in further examining the technical vocabulary in the same newspaper after a period of time to ensure that the research reflects the language of the time. A long term goal of studies of the vocabulary in newspapers would be to create a living database of newspaper articles that was updated periodically as new content became available to reflect the change in vocabulary over time.

Two non-newspaper corpora: The Corpus of English Novels (CEN), and Webb and Rodgers (2009a) movie corpus were used for the comparison in the validating test. The problem is that the two non-newspaper corpora used are both about fictional stories. Because both of these corpora consist entirely of fictional text, it might have also been useful to include a corpus made up of non-fictional text. Therefore, it would be useful to include a non-fiction comparison corpus such as a course book corpus or a spoken English corpus in further validation of the newspaper word lists.

2.8 Conclusion

The present study identified the technical vocabulary for *The New York Times* corpus as a whole and the technical vocabulary for seven newspaper sections. There are 405 word families in the technical vocabulary of the newspaper as a whole, which accounted for 9.76% of the running words in the NYT corpus. In terms of each newspaper section, on average there were 748 word families identified as technical vocabulary, and these words had an average lexical coverage of 23.82%. The results show that the coverage of technical vocabulary of the NYT as a whole was relatively small, while that of each newspaper section was much higher. The results also indicated that almost half of the technical words of newspapers are mid and low frequency words that are likely to be unknown to most EFL learners. Learning the technical vocabulary of one newspaper section before starting to read articles from that section could help to increase the lexical coverage of a newspaper article and lighten its vocabulary load to some extent.

Chapter 3 Conclusion

This study aimed to determine the technical vocabulary of *The New York Times* corpus. The technical vocabulary of the whole corpus and the technical vocabulary of the seven newspaper sections were identified. The study aimed to answer four research questions: How many word families make up the technical vocabulary of a newspaper? What is the lexical coverage of the technical vocabulary from a newspaper? How many word families make up the technical vocabulary from different newspaper sections? What is the lexical coverage of the technical vocabulary from different newspaper sections?

3.1 Research findings

The study answered the four research questions. In answer to the first and second research questions, a total of 405 word families were extracted from the total newspaper corpus and identified as the technical vocabulary of *The New York Times*. They occurred for 696,176 times and accounted for 9.76% of the corpus. In answer to the third and fourth research questions, on average there were 748 word families that met the three criteria and were selected as technical vocabulary for each newspaper section. The average lexical coverage of the technical vocabulary of each section was 23.82%.

Through analyzing the technical vocabulary, there are three main findings. Firstly, the lexical coverage of the technical vocabulary in newspapers as a whole may be smaller than that of the technical vocabulary of other areas. The number of technical words in the NYT as a whole was also smaller than the number of technical words in each of the seven newspaper sections. Secondly, the number and proportion of technical words in the seven sections are different. Thirdly, almost half of the words in the technical vocabulary of the seven sections and the NYT as a whole are mid frequency words.

3.2 Research implications

The findings help to reveal the most appropriate method of reading newspapers by language learners. As the technical vocabulary in different sections is different, the narrow reading approach should be followed when reading newspapers. Reading related newspaper articles from the same section reduces the lexical load and may help to achieve better vocabulary

learning results. Therefore, when reading newspapers to learn language, learners should choose to read related articles from a single section.

The findings also suggest that the identified technical vocabulary might be a useful language learning tool. For learners, they can learn the technical vocabulary in advance before reading newspaper articles. It may help to lighten the vocabulary burden to some extent when reading. For teachers, they can make use of the technical vocabulary of different newspaper sections to test students' vocabulary level, in order to help them choose the section where they know the most vocabulary.

References

- Adolphs, S. & Schmitt, N. (2003). Lexical coverage of spoken discourse. *Applied Linguistics*, 24(4), 425-438.
- Bauer, L. & Nation, I. S. P. (1993). Word families. *International Journal of Lexicography*, 6, 253-279.
- Biber, D., Johansson, S., Leech, G., Conrad, S. & Finegan, E. (1999). *Longman Grammar of Spoken and Written English*. New York: Longman.
- Cho, K. S., Ahn, K. O. & Krashen, S. (2005). The effects of narrow reading of authentic texts on interest and reading ability in English as a foreign language. *Reading Improvement*, 42(1), 58-64.
- Chung, T. M. (2009). The newspaper word list: A specialized vocabulary for reading newspapers. *JALT Journal*, 31(2), 159-183.
- Chung, T. M. & Nation, I. S. P. (2003). Technical vocabulary in specialized texts. *Reading in a Foreign Language*, 15(2), 103-118.
- Chung, T. M. & Nation, I. S. P. (2004). Identifying technical vocabulary. *System*, 32(2), 251-263.
- Coxhead, A. (2000). A new academic word list. *TESOL Quarterly*, 34, 213-238.
- Coxhead, A. & Hirsch, D. (2007). A pilot science-specific word list for EAP. *Revue Francaise de Linguistique Appliquee*, 12(2), 65-78.
- Dang, T. N. Y. & Webb, S. (2014). The lexical profile of academic spoken English. *English for Specific Purposes*, 33, 66-76.
- Danelund, L. (2013). *Exploring the level and development of Danish high school EFL learners' receptive and productive vocabulary knowledge*. Unpublished MA thesis. University of

Copenhagen.

- Fraser, S. (2007). Providing ESP learners with the vocabulary they need: Corpus and the creation of specialized word lists. *Hiroshima Studies in Language and Language Education*, 10, 127-143.
- Gardner, D. & Davies, M. (2014). A new academic vocabulary list. *Applied Linguistics*, 35(3), 305-327.
- Gardner, R. C. & MacIntyre, P. D. (1991). An instrumental motivation in language study. *Studies in Second Language Acquisition*, 13, 57-72.
- Groves, F. H. (2016). A longitudinal study of middle and secondary level science textbook vocabulary loads. *School Science and Mathematics*, 116(6), 320-325.
- Harmon, J. M., Hedrick, W. B. & Fox, E. A. (2000). A content analysis of vocabulary instruction in social studies textbooks for grades 4-8. *The Elementary School Journal*, 100(3), 253-271.
- Heatley, A. & Nation, P. (1994). *Range*. Victoria University of Wellington, NZ.
- Hu, M., & Nation, I. S. P. (2000). Vocabulary density and reading comprehension. *Reading in a Foreign Language*, 13(1), 403-430.
- Hsu, W. (2014). Measuring the vocabulary load of engineering textbooks for EFL undergraduates. *English for Specific Purposes*, 33, 54-65.
- Hwang, K., Nation, I. S. P. (1989). Reducing the vocabulary load and encouraging vocabulary learning through reading newspapers. *Reading in a Foreign Language*, 6(1), 323-335.
- Juilland, A. G., Brodin, D. R. & Davidovitch, C. (1970). *Frequency Dictionary of French Words*. The Hague: Mouton de Gruyter.
- Kang, E. Y. (2015). Promoting L2 vocabulary learning through narrow reading. *RELC Journal*, 46(2), 165-179.
- Klinmanee, N. & Sopprasong, L. (1997). Bridging the vocabulary gap between secondary school and university: A Thai case study. *Guidelines*, 19(1), 1-10.
- Krashen, S. (1989). We acquire vocabulary and spelling by reading: Additional evidence for the Input Hypothesis. *The Modern Language Journal*, 73(4), 440-464.

- Krashen, S. (2004). The case for narrow reading. *Language Magazine*, 3(5), 17–19.
- Kyongho, H. & Nation, I. S. P. (1989). Reducing the vocabulary load and encouraging vocabulary learning through reading newspapers. *Reading in a Foreign Language*, 6(1), 323-335.
- Konstantakis, N. (2007). Creating a business word list for teaching business English. *Estudios De Linguistica Inglesa Aplicada*, 7, 79-102.
- Leech, G. (1997), Teaching and language corpora: a convergence' in A. Wichmann, S. Fligelstone, T. McEnery and G. Knowles (eds.) *Teaching and Language Corpora* (pp. 1-23). London: Longman.
- Lei, L. & Liu, D. (2016). A new medical academic word list: A corpus-based study with enhanced methodology. *Journal of English for Academic Purposes*, 22, 42-53.
- Lancaster University (Producer). (2014). Corpus Linguistics: Method, Analysis, Interpretation [MOOC]. Retrieved from: <https://www.futurelearn.com/courses/corpus-linguistics>.
- Mizumoto, A. & Takeuchi, O. (2009). Examining the effectiveness of explicit instruction of vocabulary learning strategies with Japanese EFL university students. *Language Teaching Research*, 13(4), 425-449.
- Nation, I. S. P. (2012). The BNC/COCA word family lists. Retrieved from http://www.victoria.ac.nz/lals/about/staff/publications/paul-nation/Information-on-the-BNC_COCA-word-family-lists.pdf.
- Nation, I. S. P. (2013). *Learning Vocabulary in Another Language*. UK: Cambridge University Press.
- Nation, I. S. P. & Coxhead, A. (2001). The specialized vocabulary of English for academic purposes. *Research Perspectives on English for Academic Purposes* (pp. 252-267). Cambridge: Cambridge University Press.
- Nation, I. S. P. & Wang, K. (1999). Graded readers and vocabulary. *Reading in a Foreign Language*, 12(2), 355-80.
- Nation, I. S. P. & Webb, S. (2011). *Researching and Analyzing Vocabulary*. Boston: Global ELT.
- Nurweni, A. & Read, J. (1999). The English vocabulary knowledge of Indonesian University Students. *English for Specific Purposes*, 18(2), 161-175.

- Waring, R. & Takaki, M. (2003). At what rate do learners learn and retain new vocabulary from reading a graded reader? *Reading in a Foreign Language*, 15(2), 130-163.
- Rodgers, M.P.H. & Webb, S. (2011). Narrow viewing: The vocabulary in related television programs. *TESOL Quarterly*, 45(4), 689-717.
- Rose, T., Stevenson, M. & Whitehead, M. (2002). The Reuters Corpus Volume1-from yesterday's news to tomorrow's language resources. Retrieved from http://about.reuters.com/researchandstandards/corpus/LREC_camera_ready.pdf.
- Schmitt, N. & Carter, R. (2000). The lexical advantages of narrow reading for second language learners. *TESOL Journal*, 9(1), 4-9.
- Schmitt, N., Jiang, X. & Grabe, W. (2011). The Percentage of Words Known in a Text and Reading Comprehension. *Modern Language Journal*, 95(1), 26-43.
- Schneider, P. & Patrick, S. (1999). The Zurich English Newspaper Corpus. *Newspaper Library News*, 27, 6-7.
- Smitterberg, Erik. Forthcoming (2014). *Syntactic Stability and Change in Nineteenth-century Newspaper Language*. Cambridge: Cambridge University Press.
- Sternfeld, S. (1989). The University of Utah's Immersion/Multiliteracy Program: An example of an area studies approach to the design of first-year college foreign language instruction. *Foreign Language Annals*, 22(1), 341-354.
- Sinclair, J. (1991). *Corpus, Concordance and Collocation*. Oxford: Oxford University Press.
- Sutarsyah, C., Nation, I. S. P. & Kennedy, G. (1994). How useful is EAP vocabulary for ESP? *RELC Journal*, 25(2), 34-50.
- Tanaka, M. (2013). Examining kanji learning motivation using self-determination theory. *System*, 41, 804-816.
- Tseng, W. T. & Schmitt, N. (2008). Toward a model of motivated vocabulary learning: A structural equation modeling approach. *Language Learning*, 58(2), 357-400.
- Top 10 most read newspapers in the world. (2016). Retrieved from <http://www.trendingtopmost.com/worlds-popular-list-top-10/2017-2018-2019-2020-2021/world/most-read-newspapers-world-best-selling/>.
- Udorn, W. (2008). Comparing the vocabulary of different graded-reading schemes. *Reading in a Foreign Language*, 20(1), 43-69.
- Yang, M. (2015). A nursing academic word list. *English for Specific Purposes*, 37, 27-38.

- Ward, J. (2009). A basic engineering English word list for less proficient foundation engineering undergraduates. *English for Specific Purposes*, 28, 170-182.
- Webb, S. (2010a). A corpus driven study of the potential for vocabulary learning through watching movies. *International Journal of Corpus Linguistics*, 15(4), 497-519.
- Webb, S. (2010b). Pre-learning low frequency vocabulary in second language television programs. *Language Teaching Research*, 14(4), 501-515.
- Webb, S. (2010c). Using glossaries to increase the lexical coverage of television programs. *Reading in a Foreign Language*, 22(1), 201-221.
- Webb, S. (2011). Selecting television programs for language learning: Investigating television programs from the same genre. *International Journal of English Studies*, 11(1), 117-136.
- Webb, S. & Chang, A. C. (2012). Second language vocabulary growth. *RELC Journal*, 43(1), 113-126.
- Webb, S. & Macalister, J. (2013). Is text written for children appropriate for L2 extensive reading? *TESOL Quarterly*, 47(2), 300-322.
- Webb, S. & Paribakht, T.S. (2015). What is the relationship between the lexical profile of test items and performance on a standardized English proficiency test? *English for Specific Purposes*, 38, 34-43.
- Webb, S. & Rodgers, M. P. H. (2009a). The lexical coverage of movies. *Applied Linguistics*, 30(3), 407-427.
- Webb, S. & Rodgers, M.P.H. (2009b). The vocabulary demands of television programs. *Language Learning*, 59(2), 335-366.
- 2016 Newspaper web rankings. (2016). Retrieved from <http://www.4imn.com/top200/>.

Appendices

Appendix A. The technical vocabulary of the NYT as a whole

Academy	Argue	Block	Concentrate	Critic
According	Around	Broad	Concern	Crucial
Achieve	Article	Broadcast	Conclude	Current
Acknowledge	Assert	Build	Condition	Damage
Act	Assess	Cancel	Conduct	Date
Active	Assign	Capture	Confident	Decade
Actual	Associate	Caution	Confirm	December
Add	Attend	Centre	Consider	Decide
Adopt	Attribute	Challenge	Consistent	Decision
Affect	Avoid	Change	Construct	Define
Aggressive	Background	Check	Contact	Degree
Ago	Bake	Choice	Contain	Delay
Agree	Balance	Cite	Contrast	Deliver
Aim	Bar	Claim	Contribute	Demonstrate
Allow	Base	Class	Control	Describe
Also	Basic	Comment	Controversy	Designate
Alternative	Basis	Commission	Convert	Despite
Announce	Battle	Commit	Correct	Detail
Appeal	Beach	Compare	Counter	Devastate
Appoint	Because	Complain	Counterpart	Different
Appropriate	Become	Complex	Couple	Direct
April	Birth	Complicate	Crash	Directed

Discuss	Error	Forum	Indicate	Level
Dismiss	Especially	Free	Individual	Likely
Disrupt	Essential	Friday	Influence	Likeness
Diverse	Establish	Frustrate	Initial	Limit
Domestic	Event	Future	Initiate	List
Dominate	Eventually	Gap	Inside	Locate
Dozen	Example	General	Instead	Lot
Drill	Exception	Generation	Interpret	Lower
During	Exclusive	Globe	Interview	Main
Early	Expand	Grade	Involve	Maintain
Edit	Expect	Grant	Island	Major
Educate	Experience	Group	January	Manipulate
Effective	Exploit	Guarantee	Join	Many
Effort	Expose	Handle	Joint	March
Elevate	Extend	High	July	Margin
Eliminate	Extensive	Highlight	June	Massive
Embrace	Factor	Holiday	Key	Maximum
Emerge	Fail	Huge	Lack	Maybe
Emphasise	Failure	Ignore	Language	Media
Encourage	Favour	Impact	Large	Member
Enhance	February	Important	Last	Mess
Ensure	Female	Impose	Late	Mid
Entry	Focus	Include	Lead	Middle
Equivalent	Formal	Incredible	Leak	Million
Era	Former	Independent	Legacy	Minor

Monday	Past	Promote	Remove	Sensitive
Month	Peak	Prompt	Repair	Separate
Most	People	Prospect	Replace	Session
Motive	Period	Protect	Report	Several
Multiple	Phase	Provide	Represent	Shift
Nation	Plan	Public	Reputation	Shortly
Need	Plastic	Push	Require	Sign
Negative	Popular	Quote	Respond	Significant
New	Pose	Radio	Response	Similar
News	Positive	Range	Restaurant	Single
Non	Post	Rare	Restore	Soar
Normal	Power	React	Restrict	Social
November	Practise	Real	Result	Source
Number	Pre	Recall	Retain	Special
Numerous	Precede	Receive	Reveal	Specific
Obvious	Predict	Recent	Reverse	Speculate
Offer	Preserve	Recommend	Review	Split
Opportunity	Pressure	Record	Role	Sponsor
Organize	Previous	Recruit	Routine	Staff
Outcome	Problem	Refer	Rule	States
Oversee	Process	Relate	Scare	Status
Panel	Profile	Relative	Schedule	Stem
Participant	Programme	Release	Scrutiny	Stress
Participate	Progress	Rely	Self	Strict
Particular	Prominent	Remain	Senior	Strip

Stun	Tuesday
Subsequent	Typical
Success	Ultimate
Summer	Underscore
Surge	Unique
Survive	Unite
Sustain	Urgent
Tactic	Vacation
Tank	Via
Target	Video
Technical	View
Television	Vulnerable
Temporary	Wednesday
Tend	Week
Term	Weigh
Thursday	Whether
Today	Work
Topic	Worry
Total	Write
Tradition	Year
Transfer	
Transform	
Transition	
Treat	
Trip	

Appendix B. The technical vocabulary of world news

Abroad	Ago	Appeal	August	Border
Abuse	Agree	Apply	Authorise	Breach
Accelerate	Agriculture	Appoint	Authoritarian	Broadcast
Accept	Aim	Approve	Authority	Budget
Access	Alert	Area	Average	Build
Accord	Alien	Argue	Avoid	Buy
According	Allow	Armed	Balance	Cafe
Account	Ally	Army	Base	Call
Accountable	Alongside	Around	Basic	Camera
Accuse	Also	Arrest	Because	Campaign
Achieve	Alternative	Arrive	Become	Candidate
Acknowledge	Ambassador	Assail	Behalf	Capable
Active	Ambition	Assassin	Behaviour	Capital
Add	Ambitious	Assault	Belief	Capture
Adopt	Amid	Assembly	Benefit	Car
Advertise	Amnesty	Assert	Billion	Case
Advise	Amount	Assist	Blame	Cash
Advocate	Analyst	Associate	Blast	Cement
Against	Announce	Asylum	Block	Centre
Agency	Annual	Attack	Boast	Century
Agent	Anti	Attempt	Bolster	Ceremony
Aggressive	Apart	Attend	Bomb	Chairman

Challenge	Collect	Confident	Country	Define
Chancellor	Column	Confirm	Create	Delegate
Change	Command	Conflict	Credit	Demand
Channel	Comment	Confront	Crime	Democracy
Chaos	Commentator	Connect	Criminal	Democrat
Charge	Commerce	Conservative	Crisis	Demonstrate
Charity	Commission	Consider	Critic	Deny
Check	Commit	Construct	Criticise	Department
Chief	Committee	Contact	Criticism	Depend
Choice	Communicate	Contain	Culture	Deputy
Circulate	Community	Contend	Current	Describe
Cite	Compare	Contentious	Customer	Design
Citizen	Compete	Continent	Damage	Despite
City	Complain	Contract	Deal	Destination
Civil	Complete	Contribute	Debate	Detail
Civilian	Complicate	Control	Decade	Detention
Claim	Compromise	Controversy	December	Deter
Clash	Concern	Convert	Decide	Develop
Class	Concession	Convict	Decision	Device
Coalition	Conclude	Cooperate	Declare	Difference
Coast	Concrete	Coordinate	Decline	Diminish
Code	Condemn	Core	Deem	Diplomat
Collaborate	Condition	Cost	Defeat	Direct
Collapse	Conduct	Council	Defence	Directed
Colleague	Confer	Counter	Defend	Disaster

Discipline	Effort	Event	Fence	Fundamental
Disclose	Elect	Eventually	Field	Future
Discriminate	Element	Evidence	Fight	Gain
Discuss	Eliminate	Example	Final	Gap
Dismiss	Elite	Excess	Finance	Gather
Display	Embrace	Exchange	Flee	General
Dispute	Emerge	Executive	Flood	Generals
Dissent	Emergency	Exercise	Flow	Generation
Distribute	Empire	Expand	Focus	Giant
District	Employ	Expansion	Food	Global
Diverse	Encourage	Expensive	Force	Goal
Divide	Endorse	Experiment	Foreign	Goods
Division	Enforce	Expert	Forge	Govern
Domestic	Engineer	Exploit	Formal	Grant
Donor	Environment	Explosion	Former	Grapple
Dozen	Envoy	Export	Foundation	Group
During	Episode	Extend	Founded	Guard
Early	Equipment	Extreme	Fragile	Gun
Earn	Era	Facility	Free	Halt
East	Escalate	Faction	Friday	Handle
Eastern	Especially	Fail	Frustrate	Harsh
Economy	Essential	Failure	Fuel	Headquarters
Edit	Establish	Family	Fulfil	Health
Educate	Estimate	Federal	Function	Highlight
Effective	Ethnic	Feed	Fund	History

Hit	Initial	January	Lever	Measure
Holy	Initiate	Job	Liberal	Media
Hospital	Inside	Join	Liberate	Meet
Host	Insist	Joint	Licence	Member
Hostile	Inspect	Journal	Likely	Message
Human	Install	Journalist	Limit	Metal
Identify	Instead	Judicial	Line	Middle
Ignore	Institute	Judiciary	Link	Migrate
Image	Institution	Justice	List	Mile
Immigrate	Integrate	Kid	Lobby	Militant
Import	Intelligence	Kidnap	Local	Military
Important	Intense	Kill	Locate	Militia
Impose	Interior	Lack	Loss	Million
In	Internal	Language	Lot	Minister
Include	International	Large	Machine	Ministry
Increase	Interpret	Late	Main	Minor
Independence	Interrogate	Law	Maintain	Mission
Independent	Intervene	Lawyer	Major	Mister
Indicate	Interview	Lead	Majority	Mix
Individual	Intimidate	Lecture	Manage	Mobilise
Industry	Invest	Legacy	Mandate	Modern
Influence	Involve	Legal	Many	Monday
Influx	Isolate	Legislate	Market	Monitor
Inform	Issue	Legitimate	Massive	Month
Infrastructure	Jail	Level	Maximum	Most

Move	Oil	Patients	Pose	Professor
Movie	On	Pay	Post	Profile
Ms	Operate	Peace	Potential	Profit
Multiple	Opponent	Penalty	Poverty	Programme
Nation	Oppose	Peninsula	Power	Progress
Need	Option	People	Practise	Prohibit
Negative	Organize	Per	Pre	Project
Negotiate	Origin	Percent	Precede	Prominent
Neighbour	Oust	Perform	Predecessor	Promote
Network	Outcome	Period	Predict	Prompt
New	Overseas	Permanent	President	Propaganda
News	Oversee	Perpetrate	Press	Property
Newspaper	Overwhelm	Persist	Pressure	Propose
Non	Owned	Personnel	Prevent	Prosper
Normal	Pack	Petition	Previous	Protect
Northern	Page	Photograph	Price	Protest
Notorious	Panel	Plague	Prime	Provide
November	Parent	Plan	Principle	Province
Nuclear	Park	Pledge	Priority	Provoke
Number	Parliament	Police	Prison	Public
Numerous	Participate	Policy	Private	Publish
October	Particular	Politics	Problem	Push
Office	Partner	Popular	Process	Qualify
Officer	Party	Population	Product	Quote
Official	Past	Portray	Profession	Racial

Radio	Rely	Result	Screen	Sign
Rally	Remain	Retain	Seal	Significant
Rank	Remote	Reveal	Search	Similar
Rate	Remove	Reverse	Secretary	Since
React	Repair	Review	Sector	Site
Rebel	Replace	Revive	Secure	Situation
Recall	Report	Revolution	Seek	Size
Receive	Represent	Rights	Select	Slogan
Recent	Repress	Risk	Self	Social
Record	Republic	Rival	Sell	Socialist
Reduce	Request	Role	Senior	Society
Refer	Require	Root	Sentence	Soldier
Refuge	Research	Route	Sentencing	Solution
Regime	Reserve	Routine	Separate	Solve
Region	Reside	Rule	September	Source
Regular	Resist	Rural	Series	South
Regulate	Resolve	Salary	Service	Southern
Reinforce	Resort	Sale	Session	Special
Reject	Resource	Saturday	Several	Specific
Relate	Respond	Scale	Sex	Speculate
Relative	Response	Schedule	Share	Spend
Relatives	Responsible	Scholar	Shift	Sponsor
Release	Restaurant	School	Shop	Spread
Religious	Restore	Science	Shortly	Square
Reluctant	Restrict	Scramble	Show	Stable

Stadium	Supply	Territory	Transparency	Violate
Staff	Support	Terror	Travel	Violence
Stake	Supreme	Test	Treat	Virtual
Stall	Surge	Theory	Treaty	Visit
Stance	Survey	Thousand	Trial	Vote
Standard	Survive	Threat	Trip	Vow
Start	Suspect	Thursday	Tuesday	Vulnerable
State	Suspend	Tie	Typical	War
States	Sustain	Tight	Ultimate	Warn
Station	Symbol	Tiny	Underway	Wary
Status	System	Today	Unify	Weapon
Strategy	Tackle	Toll	Union	Wednesday
Stress	Tactic	Ton	Unit	Week
Strict	Tangle	Tool	Unite	Western
Strip	Target	Top	University	Whether
Student	Task	Total	Urge	Wide
Study	Teach	Tough	Urgent	Win
Style	Team	Tour	Use	Wing
Substantial	Technology	Town	Value	Work
Success	Telephone	Track	Vehicle	World
Succession	Television	Trade	Verify	Worry
Suggest	Temporary	Tradition	Version	Write
Suicide	Tend	Traffic	Victim	Year
Summer	Tense	Train	Video	Zone
Sunday	Term	Transform	Village	

Appendix C. The technical vocabulary of business news

Abandon	Affiliate	Anonymity	Author	Bill
Able	Afford	Anticipate	Authorise	Billion
About	Agency	Apart	Authority	Block
Access	Agenda	Appeal	Automate	Board
According	Agent	Apply	Available	Bonus
Account	Aggressive	Approach	Average	Boom
Accurate	Ago	Appropriate	Avoid	Borrow
Accuse	Agree	Approve	Balance	Brand
Achieve	Ahead	Area	Ban	Broad
Acknowledge	Aim	Argue	Bank	Bubble
Acquire	Allocate	Around	Bar	Budget
Acquisition	Allow	Article	Base	Build
Acre	Also	Assert	Basic	Bulk
Active	Alternative	Assess	Basis	Business
Actual	Ambition	Asset	Battery	Buy
Add	Ambitious	Assign	Because	Calculate
Adjust	Amend	Associate	Become	Campaign
Administration	Amount	Attract	Behalf	Candidate
Adopt	Analyse	Attribute	Benchmark	Capital
Advise	Analyst	Auction	Benefit	Capture
Advocacy	Announce	Audience	Bet	Car
Affect	Annual	Audit	Big	Career

Case	College	Confidence	Cost	Decide
Cash	Combine	Confirm	Council	Decision
Category	Comment	Confront	Counsel	Decline
Celebrity	Commerce	Congress	Country	Deem
Centre	Commission	Connect	Court	Defeat
Chain	Commit	Consensus	Cover	Defence
Chairman	Committee	Conservative	Create	Defend
Challenge	Communicate	Consider	Credit	Define
Change	Community	Consistent	Criminal	Definite
Charge	Company	Construct	Crisis	Degree
Charitable	Compare	Consult	Critic	Delay
Chase	Compensate	Consume	Criticise	Deliver
Cheap	Compete	Consumption	Criticism	Demand
Check	Complain	Contact	Crucial	Democrat
Chief	Complete	Contend	Culture	Demonstrate
Choice	Complicate	Content	Currency	Deny
Circulate	Component	Contest	Current	Department
Cite	Compromise	Contract	Customer	Depend
City	Computer	Contribute	Cut	Depress
Civil	Concentrate	Control	Damage	Deputy
Claim	Concern	Cooperate	Data	Describe
Class	Conclude	Copy	Database	Design
Collapse	Condition	Core	Deadline	Despite
Colleague	Conduct	Corporate	Deal	Detail
Collect	Confer	Correct	Decade	Develop

Devise	Draft	Encourage	Executive	Flexible
Diesel	Drive	Energy	Exist	Flight
Difference	Drug	Engine	Expand	Focus
Digital	Due	Engineer	Expect	Food
Diminish	During	Enormous	Expensive	Force
Direct	Early	Ensure	Experience	Foreclose
Directed	Earn	Entrepreneur	Experiment	Former
Disclose	Eastern	Environment	Expert	Foundation
Disclosure	Economy	Equipment	Explicit	Founded
Discount	Edit	Equity	Explore	Fraction
Discuss	Educate	Era	Export	Free
Dismiss	Effect	Error	Expose	Frequent
Display	Effective	Especially	Extra	Friday
Distribute	Efficient	Essential	Fail	Frustrate
District	Effort	Establish	Failure	Fuel
Diverse	Elect	Estate	Family	Fulfil
Diversify	Electric	Estimate	Federal	Function
Division	Element	Evaluate	Fee	Fund
Document	Eligible	Event	Feed	Future
Dollar	Elite	Eventually	Field	Gain
Domestic	Email	Evidence	File	Gap
Dominate	Emerge	Evolve	Final	Gas
Donate	Emphasise	Example	Finance	General
Double	Employ	Excess	Firm	Generate
Dozen	Enable	Exchange	Firms	Giant

Global	Important	International	Legislate	Many
Goal	Impose	Internet	Less	Margin
Goods	Improve	Interview	Level	Market
Govern	Include	Introduce	Lever	Material
Graduate	Increase	Invest	Likely	Maybe
Grant	Independence	Investigate	Limit	Measure
Group	Independent	Involve	Link	Media
Grow	Indicate	Issue	List	Median
Guideline	Individual	Item	Litigate	Meet
Guy	Industry	Job	Loan	Member
Handle	Influence	Join	Local	Mental
Health	Inform	Junior	Locate	Merit
Help	Initial	Jury	Loom	Message
High	Initiate	Justice	Loss	Method
Highlight	Innovate	Justify	Lot	Mid
Hire	Innovative	Labour	Low	Million
History	Instance	Lack	Lower	Mission
Hit	Instead	Large	Loyal	Mister
Host	Institute	Last	Luxury	Mix
Huge	Institution	Late	Main	Mobile
Identify	Insure	Law	Maintain	Model
Ignore	Integrate	Lawyer	Major	Modern
Image	Intense	Lead	Majority	Modest
Impact	Interest	Legacy	Manage	Modify
Implicate	Internal	Legal	Manufacture	Monday

Money	Oppose	Percent	President	Prosper
Month	Option	Perception	Pressure	Protect
Most	Organize	Perform	Prevent	Provide
Motive	Outcome	Period	Previous	Provision
Motor	Outlet	Permanent	Price	Proxy
Move	Overall	Perspective	Primary	Public
Ms	Overhaul	Pharmaceutical	Priority	Publication
Multiple	Oversee	Photograph	Private	Publish
Nation	Owned	Pickup	Problem	Pump
Need	Pack	Pilot	Process	Purchase
Negative	Page	Pioneer	Produce	Push
Negotiate	Panel	Plan	Product	Quality
Net	Parent	Plane	Profession	Raise
New	Park	Pledge	Professor	Rally
Nominee	Participate	Plummet	Profile	Range
Note	Particular	Policy	Profit	Rank
Number	Partner	Politics	Programme	Rate
Numerous	Passenger	Popular	Progress	React
Offer	Pattern	Pose	Project	Real
Office	Pay	Positive	Prominent	Receive
Officer	Peak	Post	Promote	Recent
Official	Penalty	Potential	Prompt	Recommend
Operate	Pending	Power	Property	Record
Opponent	People	Practise	Propose	Reduce
Opportunity	Per	Predict	Prospect	Refer

Region	Responsible	Science	Sign	Square
Regular	Restore	Scramble	Significant	Squeeze
Regulate	Restrict	Screen	Similar	Stable
Relate	Result	Scrutiny	Since	Staff
Relative	Retain	Secretary	Site	Stake
Release	Retire	Section	Size	Standard
Relevant	Revenue	Sector	Skill	Start
Rely	Reverse	Secure	Slide	State
Remain	Revive	Seek	Small	States
Remove	Rights	Select	Soar	Statistic
Repair	Risk	Sell	Social	Status
Replace	Rival	Senior	Sole	Stock
Report	Robust	Sensitive	Solicit	Store
Represent	Role	Separate	Solution	Strategy
Republic	Rule	September	Sophisticated	Street
Reputation	Salary	Series	Source	Stress
Request	Sale	Service	South	Strict
Require	Sample	Settle	Space	Structure
Research	Sanction	Several	Special	Study
Reside	Saturday	Share	Specific	Style
Resign	Scale	Shell	Speculate	Subsidy
Resolve	Scandal	Shift	Spend	Substantial
Resource	Sceptic	Shop	Spin	Success
Respond	Schedule	Shortly	Sport	Succession
Response	Scheme	Show	Spur	Suger

Suggest	Tight	Underscore	Want
Suit	Title	Underwrite	Warn
Summer	Today	Union	Wealth
Supervise	Top	Unique	Wednesday
Supply	Topic	Unit	Week
Support	Total	Unite	Whether
Surge	Tough	University	Work
Survive	Track	Update	World
Sustain	Trade	Urge	Worry
Symbol	Tradition	Use	Write
System	Traffic	Utility	Year
Tactic	Transact	Valley	Zero
Target	Transform	Value	
Team	Transition	Variety	
Technical	Transparency	Various	
Technology	Treasure	Version	
Telephone	Treat	Via	
Temporary	Trend	Vice	
Tend	Trial	View	
Term	Tuesday	Violate	
Test	Type	Virtual	
Theme	Typical	Vision	
Threat	Ultimate	Volume	
Thursday	Underlie	Wage	
Tie	Undermine	Wall	

Appendix D. The technical vocabulary of sports news

Able	Also	Ball	Career	Coach
Accomplish	Ankle	Base	Case	Coast
According	Announce	Basic	Celebrate	Collapse
Accuse	Appreciate	Basketball	Celebrity	Collect
Achieve	Approach	Beat	Centre	Combine
Acknowledge	Appropriate	Because	Chairman	Commerce
Acquire	April	Become	Challenge	Commit
Active	Area	Behaviour	Champion	Compare
Actual	Around	Benefit	Chance	Compete
Add	Article	Best	Chant	Complete
Adjust	Assault	Big	Charge	Complex
Adopt	Assign	Block	Chase	Complicate
After	Associate	Boo	Check	Concede
Against	Atop	Bowl	Chief	Concuss
Agent	Attack	Brand	Choice	Confidence
Aggressive	Attempt	Brief	Circuit	Confident
Ago	Attend	Broadcast	Cite	Confirm
Agree	August	Budget	City	Connect
Ahead	Available	Build	Claim	Consecutive
Aim	Average	Campaign	Class	Consistent
Allow	Award	Car	Classic	Construct
Alongside	Balance	Card	Club	Consume

Contact	Debut	Drive	Exception	Friday
Contend	Decade	Drought	Executive	Frustrate
Contest	December	During	Expand	Fun
Contract	Decision	Early	Expect	Future
Contribute	Decline	Earn	Experience	Game
Control	Defence	East	Extend	Gap
Controversy	Defend	Edge	Extra	Generate
Core	Definite	Effective	Factor	Generation
Cost	Deliver	Eight	Fame	Get
Country	Demonstrate	Eligible	Family	Global
Couple	Deny	Elite	Fan	Golf
Court	Describe	Embrace	Favourite	Grab
Crazy	Deserve	Emerge	Feed	Graduate
Create	Despite	Emphasise	Field	Group
Credit	Develop	End	Fight	Guarantee
Critic	Difference	Energy	Film	Guy
Criticise	Different	Enhance	Finish	Handle
Crowd	Directed	Era	First	Happen
Cup	Discuss	Especially	Five	Hard
Current	Display	Essential	Focus	Health
Cycle	Division	Establish	Former	Heat
Dad	Dominant	Evaluate	Foul	High
Damage	Dominate	Event	Four	Hire
Deal	Double	Eventually	Franchise	History
Debate	Draft	Example	Free	Hit

Hockey	June	Major	Negotiate	Physical
Home	Junior	Majors	Network	Pick
Host	Just	Male	New	Pinch
Identify	Kick	Manage	News	Pitch
Image	Kid	Market	Next	Plan
Impact	Lack	Match	Nine	Play
Important	Last	Mature	Normal	Plenty
Impose	Late	Maximum	Number	Plus
Impress	Lead	Maybe	Obvious	Pole
Improve	League	Media	Off	Politics
Include	Legend	Member	Opponent	Pop
Increase	Level	Mental	Opportunity	Popular
Initial	Likely	Mess	Organize	Positive
Injure	Limit	Mid	Original	Post
Inside	Line	Million	Overall	Potential
Instead	List	Minor	Oversee	Practise
Intense	Local	Mission	Owned	Praise
International	Locate	Mix	Park	Predecessor
Intrigue	Locker	Monday	Participate	Predict
Invest	Lose	Month	Past	Premier
Involve	Loss	Most	Pay	Pressure
Job	Lot	Motive	Penalty	Previous
Join	Lucrative	Nation	Percent	Price
July	Magnet	Need	Perform	Primary
Jump	Main	Negative	Personality	Prize

Problem	Record	Review	Significant	State
Process	Reduce	Rival	Similar	States
Product	Refer	Role	Since	Statistic
Profession	Regular	Rookie	Situation	Status
Profile	Reign	Roster	Six	Straight
Programme	Relate	Route	Size	Strategy
Progress	Relative	Row	Skill	Stress
Project	Rely	Run	Smart	Stretch
Promote	Remain	Salary	Snap	Stuff
Prospect	Replace	Sale	Soccer	Stun
Provide	Report	Saturday	Social	Style
Public	Represent	Schedule	Solid	Substitute
Punch	Require	Season	Southern	Success
Push	Reserve	Second	Special	Succession
Qualify	Reside	Secure	Spend	Summer
Race	Resource	Self	Spin	Sunday
Rank	Respond	Sell	Split	Super
Rare	Response	Senior	Spot	Support
Rate	Responsible	Session	Sprain	Surgery
React	Restrict	Several	Squad	Sustain
Real	Result	Share	Stadium	Switch
Really	Retire	Shift	Staff	System
Recall	Reveal	Shortly	Stake	Tackle
Receive	Revenue	Sideline	Star	Tag
Recent	Reverse	Sign	Start	Talent

Tax	Trick
Team	Trip
Technical	Tuesday
Teenage	Two
Telephone	Type
Television	Typical
Tense	Ultimate
Term	Union
Test	Unit
Three	Unite
Throw	Value
Thursday	Veteran
Tier	Victor
Tip	Victory
Title	Video
Today	Want
Tomorrow	Wednesday
Top	Week
Total	Win
Tough	Work
Tour	World
Tradition	Worry
Train	Year
Transition	Zone
Treat	

Appendix E. The technical vocabulary of politics news

About	Ago	Approach	Avoid	Brand
Abroad	Agree	Appropriate	Award	Brief
Accept	Ahead	Appropriated	Ballot	Broad
Access	Aide	Approve	Base	Build
According	Aim	April	Basic	Bureau
Account	Align	Argue	Basis	Business
Accuse	Allow	Around	Battle	Buy
Acknowledge	Ally	Article	Because	Call
Active	Also	Aspect	Become	Campaign
Add	Alternative	Assemble	Behalf	Capture
Address	Ambassador	Assert	Belief	Car
Adjust	Amid	Assess	Benefit	Career
Administration	Among	Associate	Big	Case
Adopt	Amount	Attack	Bill	Caution
Adult	Announce	Attempt	Billion	Centre
Advise	Annual	Attend	Billionaire	Century
Advocacy	Anonymity	Attorney	Birth	Chairman
Afford	Anti	Audience	Block	Challenge
Against	Anticipate	Authorise	Blunt	Change
Agency	Apology	Authority	Boast	Channel
Agenda	Appeal	Available	Border	Charge
Aggressive	Apply	Average	Boss	Check

Chief	Comprehensive	Coordinate	Define	Display
Chuck	Compromise	Core	Deliver	Dispute
Cite	Computer	Cost	Demand	District
Citizen	Concede	Council	Democrat	Divide
City	Concern	Country	Demography	Document
Civil	Conclude	Court	Denounce	Dollar
Claim	Condition	Create	Department	Domestic
Clarify	Conduct	Credit	Deploy	Dozen
Class	Confer	Crisis	Deputy	Draft
College	Confident	Critic	Describe	During
Combat	Confirm	Criticise	Designate	Early
Comment	Confront	Criticism	Despite	Economy
Commission	Congress	Crucial	Detail	Edit
Commit	Connect	Culture	Devastate	Effective
Committee	Conservative	Current	Develop	Effort
Communicate	Consider	Damage	Difference	Elect
Community	Consistent	Date	Digital	Element
Company	Constitution	Deal	Direct	Elevate
Compare	Construct	Decade	Directed	Email
Compel	Consult	Decide	Disclose	Embrace
Compete	Consume	Decision	Disclosure	Emerge
Competition	Contact	Declare	Discriminate	Emphasise
Complain	Contribute	Decline	Discuss	Employ
Complex	Control	Defence	Disease	Encourage
Complicate	Convict	Defend	Dismiss	Energy

Engineer	Factor	Future	Immigrant	Internal
Ensure	Fail	Gain	Immigrate	International
Environment	Failure	Gap	Implicate	Interview
Equal	Family	General	Import	Introduce
Era	Favour	Generals	Important	Invasion
Escalate	Federal	Generation	Impose	Invest
Especially	Fee	Giant	Improve	Investigate
Essential	Fight	Global	Include	Invoke
Establish	File	Goal	Increase	Involve
Estate	Final	Govern	Independent	Issue
Ethics	Finance	Grant	Indicate	Jail
Event	Firm	Group	Individual	January
Eventually	Flag	Guy	Influence	Jet
Evidence	Focus	Handle	Inform	Job
Example	Force	Health	Initial	Join
Exclusive	Foreign	Help	Initiate	Joint
Executive	Former	Highlight	Inside	Journal
Expand	Founded	Hispanic	Insist	Journalist
Expensive	Free	History	Inspire	July
Experience	Friday	Hit	Instead	June
Expert	Frustrate	Host	Institute	Junior
Exploit	Fuel	House	Institution	Justice
Expose	Function	Identify	Insurgent	Lack
Extend	Fund	Ignore	Intend	Language
Extensive	Fundamental	Image	Intense	Large

Late	Major	Mix	Offer	Particular
Law	Majority	Moderate	Office	Partisan
Lawyer	Manage	Modern	Official	Party
Lead	Manipulate	Momentum	On	Past
League	Many	Money	Operate	Pay
Legislate	Margin	Month	Opponent	People
Legitimate	Market	Most	Opportunity	Per
Level	Material	Motive	Oppose	Percent
Lever	Maybe	Mrs	Option	Perception
Liberal	Measure	Ms	Organize	Period
Licence	Media	Multiple	Outcome	Person
Likely	Medical	Nation	Outlet	Personnel
Likeness	Meet	Need	Outline	Plan
Limit	Member	Negative	Outrage	Point
Line	Mention	Negotiate	Outspoken	Policy
Litigate	Mess	Net	Overall	Politics
Lobby	Message	Network	Oversee	Poll
Local	Mid	New	Oversight	Pollster
Loss	Middle	News	Overwhelm	Popular
Lot	Military	Normal	Owned	Population
Lunch	Mill	Note	Pact	Populist
Machine	Million	Number	Page	Portray
Magazine	Minimum	Obtain	Panel	Pose
Main	Minor	October	Participant	Position
Maintain	Mister	Offence	Participate	Positive

Post	Propose	Regular	Reveal	Senate
Potential	Prosecute	Regulate	Revenue	Senator
Power	Prosper	Reject	Reverse	Senior
Practise	Protect	Relate	Review	Sensitive
Praise	Provide	Relative	Rhetoric	Separate
Precede	Provoke	Release	Rights	Series
Predict	Public	Reluctant	Risk	Serve
Presidency	Push	Rely	Role	Service
President	Question	Replace	Root	Several
Press	Quote	Report	Routine	Share
Pressure	Race	Represent	Rule	Shift
Prevent	Racial	Republic	Run	Shoot
Previous	Radical	Request	Saturday	Show
Priority	Range	Require	Scandal	Sign
Private	Rank	Research	Sceptic	Significant
Problem	React	Reside	Schedule	Similar
Procedure	Real	Resort	Scholar	Single
Process	Recall	Respond	Science	Site
Profession	Receive	Response	Screen	Size
Professor	Recent	Responsible	Scrutiny	Social
Profit	Recommend	Restaurant	Secretary	Solution
Progress	Record	Restore	Secure	Source
Prominent	Reduce	Restrict	Seek	South
Promote	Refer	Result	Self	Southern
Prompt	Reform	Retire	Sell	Special

Specific	Tactic	Trail	Want
Speech	Target	Transform	War
Spend	Task	Treat	Warn
Sponsor	Team	Tremendous	Wary
Staff	Technology	Trend	Wealth
Stake	Television	Type	Weapon
Stance	Temporary	Typical	Wednesday
Standard	Tend	Ultimate	Week
Stark	Tense	Undermine	Weigh
Start	Term	Underscore	Western
State	Territory	Unite	Whether
Status	Test	University	White
Strategy	Testify	Urgent	Who
Stress	Testimony	Use	Win
Strict	Threat	Value	Withhold
Strip	Thursday	Veteran	Work
Style	Tie	Victory	Worry
Sued	Today	Video	Write
Suggest	Top	View	Year
Support	Topic	Violate	
Supreme	Total	Virtual	
Survive	Tough	Volunteer	
Sustain	Track	Vote	
Symbol	Trade	Vulnerable	
System	Tradition	Wage	

Appendix F. The technical vocabulary of technology news

Able	Age	Approach	Available	Bulk
Academy	Aggressive	April	Average	Bunch
Accelerate	Ago	Archaeology	Avoid	Bureau
Access	Agree	Area	Background	Business
Accessory	Ahead	Argue	Balance	Button
According	Aid	Around	Ban	Buy
Account	Aim	Aspect	Base	Calculate
Accurate	Alliance	Assemble	Basic	Call
Accuse	Allow	Assert	Basis	Can
Achieve	Also	Assess	Bay	Candidate
Acknowledge	Alternative	Asset	Because	Capable
Acquire	Amount	Associate	Become	Capital
Active	Analyse	Attach	Behaviour	Capitalist
Actual	Analyst	Attack	Bet	Capture
Add	Ancient	Attract	Big	Card
Adjust	Animal	Attribute	Billion	Category
Administration	Announce	Audience	Block	Cause
Adopt	Annual	Audio	Blog	Celebrate
Advance	Anonymity	Author	Board	Cent
Advise	Anti	Authority	Box	Centre
Advocate	Appeal	Automate	Brand	Century
Affect	Apply	Automobile	Build	Chairman

Challenge	Comment	Congress	Create	Delete
Champion	Commerce	Connect	Credit	Deliver
Change	Commission	Consider	Crisis	Demand
Charge	Commit	Consistent	Critic	Democrat
Cheap	Committee	Construct	Criticise	Demonstrate
Check	Communicate	Consume	Criticism	Depend
Chief	Community	Contain	Crucial	Deploy
Choice	Company	Contend	Culture	Deputy
Chrome	Compare	Content	Current	Describe
Cite	Compete	Context	Customer	Design
City	Complain	Continent	Cycle	Despite
Claim	Complete	Contract	Damage	Detail
Class	Complex	Contribute	Data	Detect
Classify	Complicate	Control	Database	Develop
Client	Component	Convention	Date	Device
Cloud	Compromise	Convert	Deal	Difference
Clue	Computer	Cook	Debate	Different
Coast	Concept	Coordinate	Decade	Digital
Code	Concern	Core	Decide	Dioxide
Collaborate	Conclude	Corporate	Decision	Direct
Colleague	Condition	Correct	Decline	Directed
Collect	Conduct	Cost	Dedicate	Disclose
College	Confer	Country	Defence	Discount
Com	Conflict	Craft	Defend	Discover
Combine	Confront	Crazy	Define	Discuss

Display	Element	Eventually	Federal	Fundamental
Distribute	Eliminate	Evidence	Fee	Future
Divide	Email	Evolve	Female	Gadget
Doctor	Embed	Example	Field	Gain
Document	Emerge	Executive	Final	Galaxy
Domestic	Emit	Exist	Finance	Game
Dominant	Emphasise	Expand	Fined	Gas
Dominate	Employ	Expect	Firm	Gender
Dozen	Enable	Expense	Firms	General
Draft	Encourage	Expensive	Fish	Generate
Drive	Engine	Experience	Flight	Generation
During	Engineer	Experiment	Flip	Genetic
Early	Enormous	Expert	Flow	Giant
Earth	Ensure	Expertise	Focus	Global
East	Enthusiastic	Explore	Food	Goal
Easy	Entity	Expose	Forecast	Goods
Economy	Entrepreneur	Extend	Former	Govern
Edit	Environment	Extensive	Fossil	Grant
Educate	Equipment	Extra	Founded	Grapple
Effect	Equivalent	Facility	Free	Group
Effective	Era	Fahrenheit	Friday	Grow
Efficient	Especially	Family	Fuel	Guide
Effort	Establish	Fast	Fun	Guy
Egg	Estimate	Feature	Function	Hack
Electronic	Event	February	Fund	Handle

Hardware	Include	Interface	Lead	Margin
Headquarters	Incorporate	Internal	Learn	Market
Help	Increase	International	Less	Massive
High	Incredible	Internet	Level	Material
Highlight	Independent	Intervene	Likely	Maybe
Hire	Indicate	Interview	Likeness	Measure
History	Individual	Intrigue	Limit	Mechanic
Hit	Industry	Introduce	Link	Media
Hook	Influence	Invest	Literal	Member
Host	Inform	Investigate	Load	Message
Household	Ingredient	Involve	Lobby	Microbe
Huge	Initial	Issue	Local	Mid
Human	Innovate	January	Log	Mill
Hypothesis	Innovative	Join	Loss	Million
Ice	Insert	July	Lot	Minor
Idea	Inside	Junior	Lower	Mister
Identify	Inspire	Key	Machine	Mix
Illustrate	Instance	Knowledge	Main	Mobile
Image	Instead	Label	Maintain	Model
Impact	Institute	Laboratory	Major	Modern
Implicate	Instruct	Language	Majority	Modify
Important	Integrate	Large	Manage	Monday
Improve	Intelligence	Late	Manufacture	Money
Incentive	Intense	Launch	Many	Monitor
Inch	Interact	Law	March	Month

More	Office	Period	Precede	Prompt
Most	Officer	Permanent	Precise	Property
Motive	Official	Persist	Predict	Propose
Move	Often	Perspective	President	Protect
Movie	Operate	Phenomenon	Pressure	Provide
Ms	Opportunity	Photograph	Previous	Public
Multiple	Option	Physical	Price	Publish
Museum	Organize	Pioneer	Primary	Pump
Music	Original	Plan	Prime	Purchase
Nation	Other	Plant	Priority	Push
Need	Overall	Platform	Privacy	Quality
Net	Overseas	Plenty	Private	Quarter
Network	Oversight	Plug	Probably	Query
Neural	Page	Plus	Problem	Raise
New	Parent	Policy	Process	Range
News	Participate	Pop	Produce	React
Northern	Particular	Popular	Product	Real
Note	Partner	Population	Profession	Recent
November	Pay	Pose	Professor	Record
Nuclear	Peer	Positive	Profile	Reduce
Number	People	Post	Profit	Refer
Numerous	Per	Potential	Programme	Region
Ocean	Percent	Power	Progress	Regular
Oculus	Perception	Practical	Project	Regulate
Offer	Perform	Practise	Promote	Reject

Relate	Robot	Sequence	Solar	Strategy
Relative	Robust	Series	Solution	Stress
Release	Role	Service	Solve	Strict
Relevant	Root	Set	Sophisticated	Structure
Rely	Routine	Several	Source	Student
Remove	Sale	Shape	South	Study
Rent	Sample	Share	Southern	Stuff
Replace	Satellite	Shift	Space	Submit
Replicate	Scale	Shop	Span	Subscribe
Report	Scare	Shortly	Special	Success
Represent	Sceptic	Show	Specific	Suggest
Require	Schedule	Shrink	Spend	Summer
Research	School	Sign	Spread	Supply
Reside	Science	Signal	Spur	Support
Resource	Screen	Significant	Staff	Surge
Respond	Search	Silicon	Stake	Survey
Response	Sector	Similar	Standard	Survive
Responsible	Segment	Simple	Star	Sustain
Restrict	Select	Single	Start	Switch
Result	Sell	Site	State	System
Reveal	Senator	Size	States	Tablet
Revenue	Senior	Small	Statistic	Tag
Reverse	Sensor	Smart	Status	Tank
Rights	Separate	Social	Stock	Target
Risk	September	Software	Store	Team

Technical	Transact	Value	Whether
Technique	Transition	Variety	Wide
Technology	Translate	Various	Win
Teenage	Transport	Vary	Wire
Telephone	Trend	Vast	Wireless
Temporary	Trick	Venture	Work
Tend	Trillion	Version	World
Term	Trip	Versus	Worry
Test	Tuesday	Via	Write
Threat	Tweet	Viable	Year
Thrive	Twitter	Vice	
Thursday	Type	Video	
Tiny	Typical	View	
Title	Ultimate	Violate	
Today	Underlie	Virtual	
Tool	Undermine	Visual	
Top	Underscore	Vulnerable	
Topic	Unique	Warn	
Total	Unite	Wealth	
Tough	Universe	Web	
Track	University	Wednesday	
Trade	Upgrade	Week	
Tradition	Use	Weigh	
Traffic	Vacation	West	
Train	Valley	Western	

Appendix G. The technical vocabulary of U.S. news

Abuse	Advocate	Appeal	Authority	Bus
Accept	Affect	Apply	Available	Buy
Access	After	Appoint	Avoid	Call
Accident	Agency	Approach	Award	Camera
Accommodate	Aggressive	Approve	Balance	Campus
According	Ago	April	Bar	Candidate
Account	Agree	Area	Base	Capital
Accountable	Agriculture	Argue	Basic	Capture
Accuse	Ahead	Army	Because	Car
Acknowledge	Aid	Around	Become	Case
Acre	Aide	Arrest	Behalf	Cash
Active	Aim	Article	Behaviour	Cause
Actual	Alcohol	Assess	Benefit	Celebrate
Add	Allege	Assist	Billion	Celebrity
Address	Allow	Associate	Birth	Centre
Adequate	Also	Attack	Black	Century
Administration	Alternative	Attempt	Block	Ceremony
Administrative	Amount	Attend	Board	Chairman
Administrator	Analyse	Attorney	Born	Challenge
Adult	Announce	Attribute	Brand	Champion
Advise	Annual	Author	Budget	Change
Advocacy	Anti	Authorise	Build	Charge

Check	Company	Control	Culture	Denounce
Chemical	Compare	Convert	Current	Deny
Chief	Compete	Convict	Dad	Department
Child	Complain	Cooperate	Damage	Deploy
Choice	Complaint	Coordinate	Data	Deputy
Cite	Complex	Corporate	Date	Describe
City	Complicate	Corps	Death	Design
Civil	Computer	Cost	Debate	Despatch
Claim	Concentrate	Council	Decade	Despite
Class	Concern	Counter	Decide	Destruction
Client	Conclude	Country	Decision	Detail
Club	Condition	County	Decline	Detect
Coalition	Conduct	Couple	Dedicate	Devastate
Collaborate	Confer	Court	Deem	Develop
Collapse	Confirm	Cover	Defeat	Directed
College	Conflict	Create	Defence	Disaster
Combine	Confront	Credible	Defend	Disclose
Comment	Congress	Credit	Defendant	Discriminate
Commerce	Connect	Crew	Define	Discuss
Commission	Consider	Crime	Definite	Disease
Commit	Constitute	Criminal	Defy	Dismiss
Committee	Constitution	Critic	Degree	Display
Communicate	Consult	Criticise	Delay	Dispute
Community	Contact	Criticism	Demand	Disrupt
Commute	Contract	Crucial	Democrat	District

Divide	Emerge	Example	Firearm	Guard
Division	Emergency	Excess	Focus	Guilty
Document	Emphasise	Executive	Food	Gun
Dozen	Employ	Exempt	Force	Guy
Drive	Encounter	Exist	Former	Handle
Drug	Encourage	Expand	Founded	Happen
Dump	Energy	Expensive	Four	Harsh
During	Enforce	Experience	Free	Headquarters
Early	Engineer	Expert	Friday	Help
Earn	Enlist	Extension	Frustrate	High
East	Ensure	Extensive	Fuel	Highlight
Eastern	Environment	Extreme	Fund	Hire
Economy	Episode	Facility	Gender	History
Edit	Equal	Factor	General	Home
Educate	Era	Fail	Generate	Homicide
Effect	Error	Failure	Generation	Hospital
Effective	Especially	Family	Giant	Human
Efficient	Essential	Fatal	Gift	Identify
Effort	Establish	Federal	Goal	Image
Eight	Estimate	Female	Govern	Impact
Elect	Evaluate	Field	Grade	Important
Electric	Event	Fight	Grand	Impose
Electronic	Eventually	File	Grant	Improve
Element	Evidence	Final	Group	Incarcerate
Eligible	Examine	Finance	Guarantee	Incident

Include	Island	Lesbian	Marine	Multiple
Income	Issue	Level	Market	Murder
Incorporate	Job	Liable	Mass	Nation
Increase	Join	Lieutenant	Material	Need
Independent	Joint	Likely	Maybe	Neighbour
Indicate	Journal	Limit	Mayor	Network
Indict	Journalist	Link	Measure	New
Individual	Judge	List	Medal	News
Industry	June	Literal	Medical	Newspaper
Inform	Junior	Lobby	Member	Nine
Initial	Jurisdiction	Local	Memo	Nominate
Injure	Justice	Lot	Message	Normal
Inmate	Kill	Magazine	Method	North
Inside	Label	Main	Mile	Northern
Inspect	Lack	Maintain	Militant	November
Install	Large	Major	Military	Nowhere
Instance	Late	Majority	Million	Number
Institute	Law	Male	Minor	Numerous
Institution	Lawyer	Mall	Mister	Obtain
Intense	Lead	Manage	Mix	October
Internal	League	Mandatory	Model	Offence
Internet	Legacy	Manufacture	Modern	Offend
Interview	Legal	Many	Monitor	Office
Investigate	Legislate	March	Month	Officer
Involve	Legislature	Margin	Ms	Official

Operate	Pattern	Pose	Prompt	Reduce
Opponent	Pay	Positive	Property	Refer
Opportunity	Pending	Post	Propose	Reform
Oppose	Pentagon	Potential	Prosecute	Region
Option	People	Practise	Protect	Register
Order	Per	Predict	Protest	Regulate
Organize	Percent	President	Provide	Reject
Original	Perform	Press	Provoke	Relate
Overall	Period	Pressure	Public	Relative
Overhaul	Persist	Prevent	Publish	Relatives
Oversee	Photograph	Previous	Punish	Release
Overwhelm	Physician	Price	Purchase	Rely
Owned	Plan	Priority	Qualify	Remain
Pack	Plea	Prison	Race	Remove
Page	Plead	Privacy	Racial	Repair
Paint	Pledge	Private	Radio	Replace
Parent	Plot	Privilege	Range	Report
Parish	Police	Problem	Rank	Represent
Park	Policy	Process	Rate	Republic
Particular	Politics	Profession	React	Request
Partisan	Poll	Professor	Recall	Require
Partner	Pop	Profit	Receive	Research
Passenger	Popular	Programme	Recent	Reside
Past	Population	Progress	Recommend	Resign
Pat	Portray	Prohibit	Record	Resource

Respond	Sceptic	Shirt	Store	Task
Response	Schedule	Shoot	Strategy	Tax
Responsible	School	Show	Street	Teach
Restaurant	Science	Sign	Stress	Team
Restore	Scramble	Significant	Strict	Technical
Restrict	Screen	Similar	Structure	Technique
Result	Search	Sister	Study	Telephone
Retire	Secretary	Site	Stun	Temperature
Reveal	Sector	Six	Style	Temporary
Revenue	Secure	Social	Submit	Tend
Review	Seek	Sole	Substantial	Term
Rifle	Select	Solve	Suburb	Test
Rights	Self	Son	Suggest	Testify
Risk	Sell	South	Summer	Testimony
River	Senator	Southern	Sunday	Theory
Role	Senior	Special	Superintendent	Threat
Root	Sentencing	Specific	Supervise	Thursday
Routine	Separate	Spend	Supply	Ticket
Rule	Series	Split	Support	Tie
Rural	Service	Staff	Surveillance	Tip
Safe	Session	Standard	Survive	Today
Sale	Several	Start	Suspect	Top
Saturday	Sex	State	Sustain	Total
Say	Share	States	System	Tough
Scare	Shift	Statute	Target	Tour

Track	Urban	Work
Trade	Urge	Worry
Tradition	Urgent	Write
Tragedy	Use	Year
Train	Value	Zone
Transform	Via	
Transport	Victim	
Trauma	Victory	
Treat	View	
Trend	Violate	
Trial	Violence	
Trigger	Violent	
Trip	Visit	
Truck	Vote	
Tuesday	Vow	
Twitter	War	
Type	Warn	
Ultimate	Water	
Undermine	Wednesday	
Uniform	Week	
Union	Weigh	
Unique	Western	
Unit	Whether	
University	Who	
Update	Witness	

Appendix H. The technical vocabulary of arts news

Abandon	Ambition	Attach	Big	Card
Absorb	Ambitious	Attend	Birth	Career
Access	Ancient	Audience	Blend	Carve
Acclaim	Animal	Author	Block	Cash
Achieve	Annual	Available	Blue	Cast
Acoustic	Anti	Award	Book	Celebrate
Acquire	Apart	Background	Booth	Celebrity
Active	Apply	Balance	Born	Centre
Add	Appreciate	Ban	Borrow	Century
Adopt	Approach	Band	Boundary	Challenge
Adult	Appropriate	Bang	Bowl	Choice
Advise	April	Baritone	Brass	Chronicle
Aesthetic	Architect	Baroque	Brief	Cinema
Age	Architecture	Base	Brilliant	Circle
Ago	Area	Basement	Broadcast	Citizen
Ahead	Around	Basic	Build	City
Aim	Array	Basis	Buy	Claim
Album	Art	Bass	Buzz	Clarify
Alongside	Aspect	Beam	By	Clarinet
Also	Aspire	Become	Canvas	Class
Alternate	Assign	Benefit	Capture	Classic
Alternative	Associate	Bible	Car	Clay

Clip	Concrete	Dance	Division	Emerge
Club	Conduct	Date	Document	Emphasise
Coast	Conflict	Dazzle	Documentary	Encounter
Collaborate	Connect	Debate	Donate	Encourage
Colleague	Construct	Debut	Double	Energy
Collect	Contain	Decade	Dozen	Ensemble
College	Contemporary	Dedicate	Drama	Entertain
Colour	Context	Define	Drone	Epic
Combine	Contribute	Deliver	Drum	Equal
Comic	Control	Demonstrate	Duet	Era
Commerce	Convert	Depict	Duo	Especially
Commit	Convey	Describe	During	Essential
Community	Corporate	Despite	Dynamic	Establish
Company	Cost	Detail	Early	Estate
Compare	Costume	Develop	Earn	Event
Compel	Cover	Devote	Economy	Evolution
Compete	Create	Different	Edit	Evolve
Competition	Credit	Digital	Edition	Example
Complete	Critic	Directed	Educate	Exception
Complex	Criticism	Discipline	Eight	Excerpt
Complicate	Critique	Discuss	Elaborate	Exchange
Compose	Crucial	Display	Elect	Execute
Concentrate	Culture	Distribute	Element	Exhibit
Concept	Curator	Diverse	Elite	Exist
Concert	Current	Divide	Embrace	Expand

Expanse	Film	Genre	Illustrate	Interpret
Experience	Final	Giant	Image	Interview
Experiment	Finale	Gift	Imitate	Intrigue
Expose	Finance	Global	Immigrant	Introduce
Extend	Five	Goal	Impact	Investigate
Extra	Floor	Govern	Important	Invite
Extravagant	Flute	Graduate	Improvise	Involve
Fabric	Focus	Grammy	Include	Issue
Factory	Football	Grand	Increase	Jay
Fairs	Form	Grant	Incredible	Jazz
Familiar	Former	Groove	Independent	Join
Family	Foster	Group	Industry	Joint
Famous	Founded	Guest	Influence	Juxtapose
Fan	Four	Guitar	Inform	Kick
Fantastic	Fox	Hall	Initial	Label
Fantasy	Frame	Handle	Initiate	Lake
Fascinate	Frustrate	Harmony	Inside	Landscape
Fashion	Fun	Heritage	Inspire	Language
Favourite	Fund	Hero	Install	Large
Feature	Funk	Hip	Institution	Late
Female	Fuse	History	Instrument	Lead
Feminist	Future	Host	Integrate	Lecture
Festival	Gallery	Human	Intense	Legacy
Field	Game	Ideal	International	Level
Figure	Generation	Identify	Internet	Libretto

Likeness	Media	Music	Operate	Phenomenon
Limit	Meditate	Myth	Opportunity	Philharmonic
Line	Melody	Naked	Optimist	Photograph
List	Member	Narrate	Orchestra	Physical
Literal	Memorable	Nation	Organize	Piano
Lively	Memory	Navigate	Origin	Picture
Loan	Mentor	Negative	Original	Piece
Local	Metal	Network	Orthodox	Pioneer
Locate	Mid	New	Outfit	Plan
Lot	Mill	News	Oversee	Platform
Loyal	Mini	Normal	Owned	Play
Lyric	Mission	North	Pack	Plenty
Magazine	Mister	Note	Panorama	Poem
Magic	Mix	Novel	Parent	Poet
Main	Mode	Number	Part	Poignant
Maintain	Model	Numerous	Particular	Police
Major	Modern	Obscure	Partner	Polish
Male	Monster	Obsess	Past	Politics
Manipulate	Month	Ocean	Peer	Pop
Mark	Most	Offer	People	Popular
Market	Motive	Office	Percussion	Portrait
Masterpiece	Move	Official	Perform	Pose
Material	Movie	Often	Period	Post
Maximum	Ms	Oil	Personality	Power
Mayor	Multiple	Opera	Perspective	Practise

Pre	Public	Renaissance	Royal	Signature
Precede	Publish	Render	Rule	Significant
Precise	Purchase	Renown	Sample	Similar
Predict	Quality	Repertory	Saxophone	Sing
Premiere	Quote	Replace	Scare	Single
Premise	Race	Represent	Scene	Site
Present	Racial	Republic	Schedule	Size
Pressure	Radical	Reputation	School	Smart
Preview	Radio	Resemble	Science	Social
Price	Range	Reside	Score	Solo
Primary	Rare	Resource	Second	Song
Print	Raw	Respond	Section	Sophisticated
Problem	React	Restaurant	Self	Soprano
Process	Real	Restore	Sell	Sound
Produce	Recall	Result	Sensible	Source
Product	Recent	Reveal	Sequence	Southern
Profession	Recite	Review	Series	Space
Profit	Refer	Revolution	Session	Special
Programme	Region	Rhythm	Set	Specific
Progress	Regular	Rigour	Seven	Spend
Project	Rehearse	Rock	Several	Spin
Prominent	Relate	Role	Shape	Split
Promote	Relative	Romantic	Share	Sprawl
Provide	Release	Root	Shift	Staff
Provoke	Religious	Route	Show	Stage

Stain	Survive	Title	Version
Stake	Sustain	Today	Veteran
Standard	Symbol	Tool	Via
Staple	Symphony	Top	Video
Star	System	Topic	View
Start	Talent	Track	Violence
State	Target	Trade	Virtuoso
States	Teach	Tradition	Visible
Status	Team	Transform	Vision
Stock	Technique	Treat	Visit
Story	Technology	Tribute	Visual
Strategy	Teenage	Trick	Vivid
String	Television	Tune	Vocal
Strip	Tend	Ultimate	Wall
Structure	Tenor	Unique	War
Student	Term	Unite	Wealth
Studio	Text	Universe	Week
Study	Theatre	University	Win
Style	Theme	Update	Work
Subject	Theory	Urban	World
Succession	Thrill	Use	Write
Suggest	Thrive	Value	Year
Support	Ticket	Van	
Surface	Tiny	Various	
Surreal	Tip	Vary	

Curriculum Vitae

Name: Jiahui Zhu

Post-secondary Shandong University

Education and Jinan, Shandong, China

Degrees: 2011-2015 B. A.

The University of Western Ontario

London, Ontario

2015-2017 M. A. (in progress)

Scholarship: Entrance Scholarship

The University of Western Ontario

2015-2017