ELL VOCABULARY ACQUISITION:
HOW IMPROVEMENT MEASUREMENTS ARE AFFECTED BY TEXT TYPE, ENGLISH
READING ABILITY, AND ASSESSMENT METHODS

by

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This thesis, submitted by JoEllen Magnus in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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This thesis meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

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Department Linguistics

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Date __________________________
July 10, 2013
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<td>An incorrect answer option for a multiple-choice question</td>
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<td>ELL</td>
<td>English Language Learner</td>
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<td>L1</td>
<td>Language One, the primary language used by an individual, usually the first language learned in childhood</td>
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<tr>
<td>Literacy</td>
<td>The ability to comprehend written communication and communicate through writing</td>
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<td>Word tier</td>
<td>A categorization of words based on their frequency of usage. Tier 1 words are the 1,000 most common English words, Tier 2 words are the next 1,000 most common English words, and Tier 3 words occur frequently within academic texts. The remaining words are Tier 4 words.</td>
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ABSTRACT

Vocabulary acquisition is a crucial part of language learning. This study seeks to determine what textual and student factors affect vocabulary acquisition rates from reading English texts for high school students for whom English is a second language, as well as how assessment factors affect the measurement of vocabulary acquisition. In this study, vocabulary acquisition was measured by comparing the differences between pre-test and post-test scores from before and after reading different texts. Text type did not affect student outcomes, but the improvement rates were affected by students’ pre-test scores, students’ English reading ability, and the types of assessment questions. This study indicates that targeted reading can be a great tool to help students acquire specific vocabulary, and that targeted reading is beneficial for students with different English reading abilities. The results also indicate that teachers who serve English language learners should pay close attention to the assessment methods they use and be aware that different assessment methods measure learning differently.
CHAPTER 1
INTRODUCTION

Vocabulary mastery directly affects how successful English Language Learner (ELL) students are, so ELL students and the teachers who serve them will benefit from any teaching method that improves the rate at which ELL students acquire and use vocabulary. This study seeks to help ELL professionals choose texts that best help students learn vocabulary by synthesizing new research with previous research to identify the types of texts and questions that are most effective, as well as the ways in which students’ English reading ability and teachers’ teaching methods may affect student outcomes.

Vocabulary acquisition is a crucial part of language learning. August and Shanahan (2008) report that several studies have examined different facets of the relationship between literacy (the ability to comprehend written communication and communicate through writing) and vocabulary. These include Kame’enui & Simmons’ finding that reading practice increases word recognition, Stanovich’s finding that early reading difficulties result in insufficient vocabulary for later reading comprehension, and Stahl’s finding that oral vocabulary skills correlate with literacy development. For ELL students, both literacy development and vocabulary acquisition are essential. Standardized testing schedules mean that both objectives need to be met rapidly. Ideally, the texts students read should provide maximum benefits for both developmental objectives, but there has not been research to determine which types of texts are most likely to do so. This study seeks to determine whether high school ELL students acquire English vocabulary better from narrative texts or expository texts.
1.1 The Role of Literacy in ELL Students’ Success

In the United States, the number of ELL students has been increasing steadily over the past thirty years (August 2008; Shin, Kominski, and U.S. Census Bureau 2010). English literacy is an important skill for ELL students in the United States to develop, because English literacy is necessary for standardized testing and content area schoolwork, and because English literacy is needed for so many of the jobs available in the U.S. Students are more likely to develop the academic vocabulary that they need to succeed in school if they read extensively, and students learn vocabulary better when they learn it within the context of reading, rather than just studying vocabulary words in isolation (Garcia 2003).

For ELL students, literacy is both an end in itself and a means to an end. Students need to be able to read in order to succeed in school and in the workplace, and students gain language and content area knowledge through reading. Literacy in the L1 can also help improve students’ English literacy, since metalinguistic skills learned in the L1 can transfer to English, especially for languages that share similar features with English (Koda and Zehler 2008). Put another way, “Literacy in any language is an asset to learning English” (Alberta Education 2013). This study will not examine the role of L1 literacy in developing English vocabulary, but it is based on the same premise that reading can be a tool to acquire language.

This study was conducted in Grand Forks, North Dakota. Although Spanish is the most common first language (L1) for ELL students in the United States (August 2008), the ELL students in Grand Forks, North Dakota, are not primarily Spanish-speaking. Most were born outside the United States and have come to Grand Forks as refugees. This is a particularly interesting demographic to study, since August (2008) claims that ELL students who were born outside the United States are less likely to speak English very well than are ELL students born in the United States. August also reports that, overall, ELL students tend to perform poorly on standardized tests in comparison with
students for whom English is their L1 and have much lower rates of high school completion. In addition, August et al. (2008) found that ELL-specific literacy instruction is important because ELL students benefit from adjustments to instructional approaches used to teach literacy skills to students for whom English is their L1.

Although we know that literacy and reading improve student outcomes, we do not know exactly which types of specific skills are affected. This study seeks to determine the effects of reading in English on English vocabulary acquisition, based on textual, student, and assessment variables.

1.2 Introduction to the Current Study

For the purposes of this study, a narrative text was a text that followed a time-based plot to show what characters did and how they changed, while an expository text was a text that was primarily descriptive in nature, comparing or contrasting different things or ideas, or arguing for a specific perspective. There may be sections of expository text within a descriptive text or vice versa, but each text was categorized based on its overarching intent and format. These two types of texts were chosen because they are the most common types of texts used in school curricula, both for language-related classes and for other subjects.

I expected to find that students recall vocabulary better when the vocabulary is encountered and acquired through a narrative. Narratives engage the mind in simulation and bring in emotion, which makes them memorable (Heath 2007). Since narratives themselves are memorable, I hypothesized that students would also remember the vocabulary that they learned through narratives better than vocabulary learned through expository texts. I found, however, that there was little difference between narrative and expository texts regarding students’ vocabulary test score gains.

Since reading English texts can develop both vocabulary and literacy for ELLs, and the vocabulary gains are the same for narrative and expository text types, my
conclusion is that teachers should choose texts and activities that are most likely to engage student interest, rather than choosing texts based on implicit textual features.

To assess and compare students’ vocabulary acquisition, I created tests for each text the students read during this study. Each test included three different types of questions: multiple-choice definition questions, sentence-completion (fill-in-the-blank) questions taken directly from sentences within the text, and sentence-completion questions from other, unrelated sources. I found that student scores were lower for both types of sentence-completion questions than for definition questions. Students were divided into three reading groups based on their English reading ability, and the score differences related to question type were particularly noticeable for low reading group students. I conclude that researchers and teachers need to pay close attention to the way that English reading ability and question format interact, since these factors may influence the results of vocabulary assessments.

I discuss the previous research that led me to my hypotheses and contributed to my conclusions in Chapter 2.

I describe the participants, classroom procedure, texts, vocabulary selection, and tests for the current study in Chapter 3.

Chapter 4 includes the data and discussion related to the effects of text type, English reading ability, vocabulary word tier, and question type on students’ improvement rates on the tests included in Appendix B. I will also discuss the effect these same factors had on the types of distractors (incorrect answers) students chose when they answered questions incorrectly. Text type refers to the classification of each text as a narrative or expository text. English reading ability refers to the reading group the student participated in, whether low, mid, or high. Vocabulary word tier refers to the classification of a word based on its frequency of usage in a general corpus of English texts. For this study, I used the word tier classification developed by Heatley and Nation (1994). I analyzed the texts via the Web Vocabprofile online tool (Cobb
2013) to identify the word tier for each vocabulary word. Question type refers to the differentiation between definition and sentence-completion question formats.

In Chapter 5, I will compare these findings with previous research and discuss the implications this study brings to our cumulative understanding of ELL vocabulary acquisition and the limitations to the claims that can be made based on this study.

In Chapter 6, I will conclude by proposing practical teaching strategies that teachers who interact with ELL students should adopt as a result.
CHAPTER 2
LITERATURE REVIEW

The initial and primary goal of this study was to provide guidance for improving ELL student outcomes by examining how reading different types of texts contributed to vocabulary acquisition. Other research has compared how L1 vocabulary acquisition affects L2 vocabulary acquisition, how L1 literacy development affects L2 literacy development, how the content of the texts affects vocabulary and comprehension outcomes, and how storybook reading affects vocabulary acquisition. The common theme in all of these studies is that reading improves vocabulary acquisition, while the details of what is read and how it is read have an inconclusive effect.

2.1 Vocabulary

The importance of English vocabulary acquisition for ELL students can hardly be overstated. Without vocabulary knowledge, students cannot understand what they read, even if they learn to decode beautifully. Of course, this is true for all students, not just ELL students: Low-income children, both bilingual and monolingual, tend to have less English vocabulary knowledge than their peers, and this vocabulary deficiency correlates with lower literacy skills (Dickinson et al. 2003). The converse has also been observed; better vocabulary knowledge correlates with both listening comprehension and reading comprehension (Proctor et al. 2005). Further, interventions designed to directly teach English vocabulary have been found to improve both vocabulary and reading comprehension for ELL students (Carlo et al. 2004).
Besides contributing to comprehension, English vocabulary acquisition can actually contribute to further English vocabulary acquisition. Nation and Waring (2013) discuss how a reader who knows 95% of the vocabulary in a text can accurately guess the meaning of the other words. Reese and Cox (1999) found that vocabulary acquisition from reading depended upon both initial vocabulary skills and the type of interaction they received from adults who read to them. Sénéchal, Thomas, and Monker (1995) found that children who started with larger vocabularies were able to learn more new vocabulary from reading than children with smaller initial vocabularies.

Since vocabulary has such far-reaching effects on ELL students' success, every attempt should be made to increase vocabulary acquisition so that ELL students can acquire and use more vocabulary as quickly and easily as possible.

Nation and Waring (2013) suggest that learners need to know approximately 3,000 words in English in order to be able to effectively learn new words from reading, without requiring modified texts or supplemental instruction. Nation and Waring recommend that the first 2,000 words for ELL students should come from the 2,000 most common words in English identified on the General Service List (GSL) developed by Michael West in 1953. These words account for about eighty percent of the words used, and the words that are frequent in academic texts, which they call the University Word List (UWL), account for an additional 836 words. The Range program, developed by Heatley and Nation (1994), allows texts to be analyzed based on these four categories: the 1,000 most common words are Tier 1 words, the next 1,000 most common words are Tier 2, academic terms are Tier 3 words, and all other words are Tier 4 words. By focusing on teaching ELL students the Tier 1, Tier 2, and Tier 3 words first, we can make it easier for them to read texts on their own and to continue to acquire additional vocabulary through those texts.
2.2 Text Language

Some studies indicate that vocabulary acquisition in one language tends to compete with vocabulary acquisition in another language, while other studies indicate that some aspects of vocabulary acquisition may be transferred from one language to another. Both views are summarized by Quiroz, Snow, and Zhao (2010), and in their study of the factors affecting vocabulary for Spanish-English bilinguals, they found support for both views. For an individual child, better English vocabulary tended to correlate with worse Spanish vocabulary, and vice versa. When comparing children with one another, though, they found that children had better vocabulary in both languages when they were read to more frequently and when their mothers asked more labeling questions while reading with them.

Studies that focus on meta-cognitive skills tend to support the transfer theory, but even within specific areas of study, there are contradictory results. The studies included in August and Shanahan (2008a) found that reading readiness was a transferrable skill, in that reading readiness predicted L2 reading ability, regardless of whether the reading readiness was measure in the L2 or in the L1. However, Hancock (2002) found that Spanish-speaking children whose parents read Spanish books to them scored higher on a pre-reading skills test than Spanish-speaking children whose parents read to them in English. This raises a chicken-and-egg question about language use: If L1 reading improves reading readiness, but reading readiness measured in either language predicts L2 reading ability, at what point should L2 reading be introduced?

Because of these inconclusive results, it seems that the best approach for ELL students is to focus on maximizing the amount of time spent reading (or being read to) in either language, rather than worrying about which language is being read.
2.3 Narrow Reading and Content Material

Narrow reading, or reading several texts on a single topic, increases the number of exposures to vocabulary related to that topic. By doing so, it can improve the likelihood that students will learn new vocabulary from reading, even without explicit instruction related to those vocabulary items. “Although the probability of learning new words from any single meeting in context is low […], the cumulative effect of multiple exposures from sustained reading is considerable” (Schmitt and Carter 2000). Although Willcutt (2004) did not examine the effect on students’ English vocabulary, she found that the Fluent Reader program, which makes it easy for students to re-read a text before answering comprehension questions, resulted in more fluent reading than traditional reading instruction. She used narrow reading to compensate for vocabulary challenges that ELL students would encounter while using the Fluent Reader program.

Cho, Ahn, and Krashen (2005) found that narrow reading increased elementary students’ motivation to read English books as well as improving their vocabulary, but the study does not compare these results with any other types of reading.

While narrow reading may be helpful for ELL students, it is not clear whether the content of the text needs to be familiar. Brantmeier (2002) conducted two studies on the effects of gender and topic familiarity on students’ reading comprehension. The first study of intermediate learners found that gender and topic familiarity did affect reading comprehension, but her later study of advanced learners found no similar significant difference in comprehension relative to gender and topic familiarity.

Here again, the best approach seems to be to maximize the amount of time spent reading. Narrow reading may help by increasing motivation, but it is not clear whether narrow reading has a greater effect on motivation than interest in the topic or familiarity with the content.
2.4 Storybook Reading

Collins (2010) examined how vocabulary acquisition rates for preschoolers were affected by differing levels of interaction with the text. She found that children acquired some vocabulary simply by hearing the words, but that “hearing words accompanied by rich definitions prompts significantly more word learning than only incidental exposure” and that children who were read to at home more often also showed greater vocabulary acquisition rates. Her study included six narrative books and two books that she describes as “information books (nonfiction).” She included the information books to test “whether words could be learned from a genre other than narrative” (p. 88), but her analysis does not compare the learning rates based on the text type, nor is it clear whether the information books were written in an expository style, or whether they were nonfiction books that followed a narrative discourse pattern.

This study has many similarities with Collins’ study, since rich definitions were included in the group reading times, both studies measured vocabulary acquisition, and both included two different types of texts. There are two notable differences, though. Collins’ study focused on preschoolers, while this study focuses on high-school students. Also, Collins did not include a pre-test in her study, so the vocabulary acquisition rates are based on a comparison with the expected scores resulting from chance guesses rather than with a pre-test. Nevertheless, the results from both studies reinforce the results from studies on other topics related to ELL literacy and vocabulary acquisition: reading improves vocabulary acquisition, which in turn improves reading comprehension. Both Collins’ study and the present study found that ELL students can gain vocabulary from different types of texts. Collins’ study points out the need for rich vocabulary explanations to supplement reading, while this study points out the ways that prior knowledge (as measured by pre-test scores) and English reading ability can affect students’ improvement rates, as well as indicating that students score differently on different types of assessment questions.
CHAPTER 3
METHODOLOGY

I worked with a group of 21 students in a self-contained English language development class, using their normal classroom routines with specifically-chosen texts, so that I could compare their learning from the different types of texts. I designed tests for each text in this study with similar types of questions so that I could also analyze the effect that the question types had on student scores. Before reading each text, the students took the test relating to that text to establish pre-test scores. They re-took the same test after reading the text to determine their post-test scores. The comparison between the pre-test and the post-test scores is considered the improvement rate. In addition to the text types, question types, and test scores, I collected data related to the students’ English reading ability, the word “tier” for each vocabulary item, and the distractors chosen in cases where students answered questions incorrectly. (“Distractor” here refers to the incorrect answer. For the sentence-completion questions, the distractors were other vocabulary items.)

3.1 Participants

I conducted this study at Red River High School in Grand Forks, North Dakota. The students involved in the study were high school students in a self-contained English language development class. Twenty-one students were involved in the study: 16 Nepali-speaking students from Bhutan, one from China, one from Mexico, and three from Africa. I did not conduct a formal survey of the students’ backgrounds or L1
literacy skills, and I know their geographic and linguistic backgrounds only from interacting with them in person.

Since the group of students in the class is not representative of the entire population of ELL students in the U.S. or even in this region (August and Shanahan 2008a, 19; Shin, Kominski, and U.S. Census Bureau 2010), I was concerned that the high percentage of Bhutanese students in the study might affect the results, or, conversely, that including the students who were not Bhutanese might obscure any results that are unique to students from the Bhutanese background. After concluding the study and initial analysis, I also analyzed the results based on only the Bhutanese students, to check for any variation that may have been caused by the inclusion of the non-Bhutanese students. The overall analysis results (described in section 4.1.1) varied by less than one percent for the Bhutanese students as a group, compared with the entire class, so I included all students in the analysis.

Four of the students did not participate in the entire course of the study, because two students moved to the area and joined the class partway through the study, and two other students were absent for one of the tests and were not able to make it up later. Those students’ scores were only included for the texts where they completed both the pre- and post-tests.

3.2 Procedure

As part of their normal class work, students were divided into three reading groups. Each group spent one-third of their classroom time in language development activities with the classroom teacher, including creative writing, games, and speaking activities related to the vocabulary and themes from the books they read. One-third of each group’s classroom time was spent using an unrelated computer-based reading program, and each group spent the remaining one-third of their classroom time in a reading group with a teaching assistant. During the spring 2012 semester, I served as one of the
teaching assistants, on a volunteer basis. This study was conducted during the final twelve weeks of the semester.

In the reading groups, students and the teaching assistant took turns reading aloud, and the teaching assistant explained unfamiliar words and concepts as needed. The teaching assistant also asked comprehension questions along the way.

Since I was primarily interested in comparing vocabulary acquisition, I had the students take a pre-test before reading each text. They then took the same test after they read each text, so that I could compare the difference in the post-test and pre-test scores as a measurement of the actual learning without having the results skewed by prior knowledge.

Aside from the pre-tests, the day-to-day classroom time remained the same for the students. They continued their normal rotations through the three stations, and, at the reading station, took turns reading aloud, stopping to discuss questions, vocabulary, or misunderstandings as they came up.

3.3 Texts

The texts for the study were chosen so that each reading group would spend approximately fifty percent of the reading time over the course of the study reading expository texts and fifty percent reading narrative texts. Since there were more students in the low reading group and the books for that reading group were shorter and took less time to read (even with repeated readings) than the books for the students in the mid- and high reading groups, there were more texts used with the low reading group.

Texts were chosen based on Lexile® measure to be appropriate to each reading group. Lexile text measures are based on word frequency and sentence length, and are used to provide a comparative measure of how difficult a text is to read (MetaMetrics 2013). Specific text titles for each reading group are listed by text type in Table 1.
Table 1. Texts Used for Each Reading Group

<table>
<thead>
<tr>
<th>Reading Group</th>
<th>Expository Texts</th>
<th>Narrative Texts</th>
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<tbody>
<tr>
<td>Low Reading Group</td>
<td>Disaster</td>
<td>Escape from Nazi Berlin</td>
</tr>
<tr>
<td></td>
<td>Killer Croc</td>
<td>Alia’s Mission</td>
</tr>
<tr>
<td></td>
<td>What Comes from Plants</td>
<td>Domitila</td>
</tr>
<tr>
<td>Mid Reading Group</td>
<td>Natural Disasters</td>
<td>In the Line of Fire</td>
</tr>
<tr>
<td></td>
<td>Killer Plants</td>
<td>The Juvie Three</td>
</tr>
<tr>
<td>High Reading Group</td>
<td>Lightning</td>
<td>Stranger in His Own Land</td>
</tr>
<tr>
<td></td>
<td>The Cloning Controversy</td>
<td>Red Midnight</td>
</tr>
</tbody>
</table>

In Table 1, the texts are listed in the order they were read, except that students alternated between reading expository and narrative texts. To control for natural improvements and progression in vocabulary acquisition over time, each group alternated between the two types of texts, reading two texts of each type over the course of the study. All the groups read an expository text first, then a narrative, then a second expository text, and then the second narrative, with this modification: Students in the low reading group read either *Disaster* or *Killer Croc* for the first expository text, not both, and all the students in the low reading group read both *Alia’s Mission* and *Domitila* for the second narrative cycle.

Texts during each reading cycle were thematically similar for all of the groups, so that the text content would not unduly affect the comparative results for different reading groups. The first expository cycle included texts related to natural disasters and weather phenomena, the first narrative cycle included texts related to World War II, the second expository cycle included texts related to botany and genetics, and the second narrative cycle included texts relating stories of people who triumph over suffering and oppression.

Specific bibliographical information for each text is listed in Appendix A.

3.4 Vocabulary Selection

For the first two sets of texts, the classroom teacher and I chose the vocabulary for the tests based on pre-reading the texts and identifying vocabulary that we thought
would be helpful – or, in some cases, based on the highlighted vocabulary that was already included in the glossary for the book. For the second two sets of texts, though, we chose to focus on tier 2 words, or the second most common one thousand words in English, and the academic words, as defined by Nation and Waring (2013). I typed some texts and used a scan-to-text program to scan others, and then used the Web Vocabprofile online tool (Cobb 2013) at http://www.lextutor.ca/vp/eng/ to analyze the texts. We chose the majority of the vocabulary words from among the most frequently-used Tier 2 words in each text, but we also included some academic words that occurred frequently within the text.

Table 2 shows the lists of vocabulary items included on the tests for each reading group, divided by text type and word tier. The text from which each vocabulary item was taken is listed in parentheses after the vocabulary item.
Table 2. Vocabulary Items

<table>
<thead>
<tr>
<th>Word Tier</th>
<th>Vocabulary from Expository Texts</th>
<th>Vocabulary from Narrative Texts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tier 1</strong></td>
<td>Also (What Comes from Plants) Dangerous (Killer Croc) Escape (Disaster) Fail (Killer Croc) Live (What Comes from Plants) Many (What Comes from Plants) other (What Comes from Plants)</td>
<td></td>
</tr>
<tr>
<td><strong>Tier 3</strong></td>
<td>Aid (Disaster) Expose (Killer Croc) Survivor (Disaster)</td>
<td>concentration camp (Escape from Nazi Berlin) Design (Domitila) specify (Escape from Nazi Berlin)</td>
</tr>
<tr>
<td><strong>Tier 4</strong></td>
<td>Capture (Killer Croc) Fiber (What Comes from Plants) Massive (Disaster) Reptile (Killer Croc) Terror (Killer Croc)</td>
<td>Persecution (Escape from Nazi Berlin) Portray (Escape from Nazi Berlin) Propaganda (Escape from Nazi Berlin)</td>
</tr>
</tbody>
</table>
## Mid Reading Group

<table>
<thead>
<tr>
<th>Word Tier</th>
<th>Vocabulary from Expository Texts</th>
<th>Vocabulary from Narrative Texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fault (Natural Disasters)</td>
<td>Accident (The Juvie Three)</td>
</tr>
<tr>
<td></td>
<td>Hair (Killer Plants)</td>
<td>Avenue (The Juvie Three)</td>
</tr>
<tr>
<td></td>
<td>Insect (Killer Plants)</td>
<td>Band (The Juvie Three)</td>
</tr>
<tr>
<td></td>
<td>Passive (Killer Plants)</td>
<td>Barely (The Juvie Three)</td>
</tr>
<tr>
<td></td>
<td>Poison (Killer Plants)</td>
<td>Breath (The Juvie Three)</td>
</tr>
<tr>
<td></td>
<td>Soil (Killer Plants)</td>
<td>Coward (In the Line of Fire)</td>
</tr>
<tr>
<td></td>
<td>Spare (Natural Disasters)</td>
<td>Exactly (The Juvie Three)</td>
</tr>
<tr>
<td></td>
<td>Spared (Natural Disasters)</td>
<td>Patient (The Juvie Three)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rake (In the Line of Fire)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Razor (The Juvie Three)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shell (In the Line of Fire)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shut (The Juvie Three)</td>
</tr>
<tr>
<td>Tier 2</td>
<td>Collapse (Natural Disasters)</td>
<td>Security (The Juvie Three)</td>
</tr>
<tr>
<td></td>
<td>Complex (Natural Disasters)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Energy (Killer Plants)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Instance (Killer Plants)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Passive (Killer Plants)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Survive (Killer Plants)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Survivor (Natural Disasters)</td>
<td></td>
</tr>
<tr>
<td>Tier 3</td>
<td>Aftershock (Natural Disasters)</td>
<td>Bunker (In the Line of Fire)</td>
</tr>
<tr>
<td></td>
<td>Crew (Natural Disasters)</td>
<td>Crouch (In the Line of Fire)</td>
</tr>
<tr>
<td></td>
<td>Erupt (Natural Disasters)</td>
<td>Invade (In the Line of Fire)</td>
</tr>
<tr>
<td></td>
<td>Evacuate (Natural Disasters)</td>
<td>Surrender (In the Line of Fire)</td>
</tr>
<tr>
<td></td>
<td>Extinguish (Natural Disasters)</td>
<td>Wade (In the Line of Fire)</td>
</tr>
<tr>
<td></td>
<td>Gust (Natural Disasters)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seismograph (Natural Disasters)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suffocate (Natural Disasters)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Torrent (Natural Disasters)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tsunami (Natural Disasters)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wreckage (Natural Disasters)</td>
<td></td>
</tr>
<tr>
<td>Word Tier</td>
<td>Vocabulary from Expository Texts</td>
<td>Vocabulary from Narrative Texts</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Tier 1</td>
<td>Charge (Lightning) Strike (Lightning)</td>
<td>Duty (Stranger in His Own Land) Remember (Red Midnight)</td>
</tr>
<tr>
<td>Tier 3</td>
<td>Channel (Lightning) Modify (The Cloning Controversy) Process (The Cloning Controversy) Unique (The Cloning Controversy)</td>
<td>Ignorance (Red Midnight) Invisible (Red Midnight) Relax (Red Midnight) Relocate (Stranger in His Own Land)</td>
</tr>
<tr>
<td>Tier 4</td>
<td>Bolt (Lightning) Clone (The Cloning Controversy) Collide (Lightning) Echo (Lightning) Flicker (Lightning) Rumble (Lightning) Sensor (Lightning) Sliver (Lightning) Spark (Lightning) Streak (Lightning)</td>
<td>Combat (Stranger in His Own Land) Fleet (Stranger in His Own Land) Invade (Stranger in His Own Land) Surrender (Stranger in His Own Land) Traitor (Stranger in His Own Land)</td>
</tr>
</tbody>
</table>

With two exceptions, students in all reading groups encountered words from all four of the word tiers with both expository and narrative texts. The two exceptions are that the low reading group did not have any Tier 1 vocabulary words from narrative texts, and the mid reading group did not have any Tier 1 vocabulary words from either narrative or expository texts.

### 3.5 Tests

I developed all the tests (included in Appendix B) for all the vocabulary words in the same format to make sure the similar for all the texts. Each test consisted of two sections of multiple-choice questions. The first section asked students to choose the
word or phrase that best defines or describes each vocabulary word. The second section asked students to complete sentences by choosing the most appropriate vocabulary word to fill in a blank within each sentence. In the second section, for each vocabulary word, there was one sentence directly related to the text being read and one sentence not related to the text. We did not tell the students that there were two sentences related to each word. During testing, the classroom teacher, the other teaching assistants, and I would explain any terms or phrases that the students were unfamiliar with, upon request, except for the vocabulary items themselves. To reduce the number of unfamiliar terms and phrases, the distractors in the first section were also terms and phrases from the texts being used in the study.

I assigned a numerical ID to each student, and after each test, I recorded each student’s response for each question, by ID, in an Excel spreadsheet, along with data about the question type and whether or not the answer was correct. Correct answers were recorded as a “1,” and for incorrect answers, the alphabetical choice of the distractor selected was recorded.

At the end of the study, I removed any data from students who had taken only a pre-test or only a post-test for a book, instead of completing both. I also removed some questions that were invalid due to typos, or where there were two possible words that could grammatically and semantically fit into a sentence-completion question. There were 4,683 individual question responses recorded, and 4,500 of those responses were included in the analysis.

I used Excel Count functions and pivot tables to compare the improvement scores for the narrative texts with the improvement scores for the expository texts, along with several subsets of the data, to determine whether there is a difference in test score improvement relative to the type of text, English reading ability, word tier, or question type. I calculated the percentage improvement for each set of data analyzed by dividing the number of correct post-test responses by the total number of post-test responses, and
then subtracting from that the number of correct pre-test responses divided by the total number of pre-test responses.

I also assigned each distractor a “Wrong Answer Score” of “1” if that distractor was the same grammatical form as the correct answer, meaning that the resulting sentence would be grammatically correct, though not semantically intelligible. For example, one of the sentence-completion questions related to *Killer Croc* was, “Because Patrice Faye likes unusual animals, he collects ______.” The choices included eight vocabulary words: dangerous, capture, expose, fail, reptiles, risks, and terrors. The correct answer is “reptiles.” I assigned a “Wrong Answer Score” of “1” to the words “risks” and “terrors,” since both matched the grammatical form of the correct answer and the sentence could be considered grammatical with those words included, though the words would not make sense in the context of this sentence. The other distractors were assigned a “Wrong Answer Score” of “0.”

For the wrong answer analysis, I eliminated questions where the form of the distractors could not be a significant factor in choosing an answer. Only questions with at least one distractor marked as having a “Wrong Answer Score” of “1” and at least one distractor having a “Wrong Answer Score” of “0” were included in the Wrong Answer Analysis.

Throughout the data analyzed in this study, students had a greater percentage improvement from the pre-test to the post-test when their pre-test scores were lower, which could seem to indicate that students actually gain vocabulary more quickly and easily when they have less initial vocabulary, instead of more. Higher improvement rates correlate with lower pre-test scores. This is a normal phenomenon when comparing improvement rates on tests; it has been observed in other fields, too. Meltzer (2002) describes the method used to normalize learning gain for a study of how well students learn Physics concepts by dividing the absolute gain (post-test score minus pre-
test score) by the maximum possible gain (maximum possible score - pretest score) to find the normalized gain.

Analysis like the normalized learning gain formula is helpful in comparing learning gains, but it also obscures the underlying data, hiding patterns like the surprisingly similar post-test scores for definition questions, which may explain why students in the high reading group had lower improvement rates than students in the low reading group for definition questions. For that reason, I chose not to use this formula in the analysis presented in Chapter 4, but instead to present the absolute learning gains.

3.6 Other Considerations

This study was intended to determine whether ELL students acquired English vocabulary better from reading narrative texts or from reading expository texts. I had expected students to learn better from narrative texts, but the data collected during this study allowed me to analyze other factors, too, including students’ English reading ability and the vocabulary word tier for each vocabulary word. Since the primary question I was seeking to answer was related to the text type, the study was not optimized for these other factors. The results and implications in Chapter 4 and Chapter 5 should also be validated based on studies that are designed and intended to specifically test vocabulary acquisition based on those factors. For example, I found that students in the high reading group were more likely to choose grammatically appropriate distractors than students in the low reading group, but the tests I used in this study were not specifically designed to include equal numbers of grammatically appropriate and grammatically inappropriate distractors for all reading groups.
CHAPTER 4
DATA

After concluding the study, I analyzed the data to answer three basic questions: 1. Did students learn vocabulary better from narrative texts or expository texts? 2. How did the type of test question affect student outcomes? 3. Are there differences in the types of wrong answers students choose that indicate that they have gained grammatical knowledge about vocabulary items? I found that text type did not affect student outcomes, but the question type did. I also found that, while students in the high reading group chose grammatically correct distractors more often than students in the low reading group did, neither group demonstrated any change between the pre-tests and the post-tests in the percentage of the time that they chose grammatically correct distractors.

4.1 Comparison of Vocabulary Improvement Scores by Text Type

I compared the improvement rates for the entire group of students for the two types of texts. I also compared the improvement rates for students in the high and low reading groups, to see if there were differences for one sub-group that were not reflected by the group as a whole. (I did not include the mid reading group, because I expected any differences based on English reading ability to be evident from a comparison of the two ends of the spectrum.) I also compared the improvement rates for vocabulary items in different word “tiers,” depending on which type of text the vocabulary items appeared in. I found that the type of text did not have an effect on student outcomes in any of these situations. Instead, the improvement rates were
related to the students’ pre-test scores: Students showed greater improvement when their pre-test scores were lowest and less improvement when their pre-test scores were highest, which is the normal expected outcome if the learning from both types of texts was analogous. Normalizing the learning gains would remove this difference.

### 4.1.1 General Comparison

For the narrative texts, students answered 565 out of 1,159 questions correctly on the pre-tests and 947 out of 1,164 questions correctly on the post-tests. For the expository texts, students answered 554 out of 1,068 questions correctly on the pre-tests and 827 out of 1,086 questions correctly on the post-tests. Although the overall percentage correct was higher for narrative texts, the rate of change was almost the same as for expository texts: Student test scores improved by 25% for narrative texts and 24% for expository texts. Figure 1 shows the pre- and post-test percentage scores for both types of texts.

![Figure 1. Pre- and Post-test Scores for Narrative and Expository Texts](image_url)

As Figure 1 shows, both the pre- and post-test scores were higher for questions related to narrative texts than for questions related to expository texts, but the gap between the
pre- and post-test scores is the same for the two types of texts. The text type may have affected the overall scores, but it did not affect the rate of learning.

4.1.2 Text Type Comparisons by Student Reading Group

The parity in score improvements between narrative and expository texts remained when I broke down the overall analysis to check for variation between students in different reading groups. For students in the low reading group, their overall improvement was 29%. Overall improvement for students in the high reading group was 20%.

Data from the mid reading group were not included in the English reading ability analyses, because I expected any differences to be most evident between the high and low reading groups, as they represent two ends of the spectrum of English reading ability within the class. Figure 2 shows how the pre-and post-test percentage scores for each type of text by reading group.

![Figure 2. Pre- and Post-Test Scores by Text Type and Reading Group](image)

As Figure 2 shows, those in the low reading group improved by 27% on tests related to expository texts and 29% on tests related to narrative texts. Those in the high reading group improved by 23% on tests related to expository texts and 16% on tests related to narrative texts.
Although there is more variation in the percentage improvement scores for reading groups than there is for the class as a whole, the variation seems to be normal learning gain variation caused by variation in the pre-test scores more than the text types. The greatest difference is the percentage improvement for narrative scores: Those in the low reading group improved by 29% on tests related to narrative texts, while those in the high reading group improved by only 16% on tests related to narrative texts. However, the high reading group pre-test scores for the narrative texts were 29% higher than the low reading group, and the maximum possible percentage improvement for the high reading group would have been 25%.

Also, while the gap between the improvements of the low and high reading group scores is large for the narrative texts, the gap is much less between the scores for the high reading group narrative texts and the high reading group expository texts.

Regardless of reading group, the text type does not seem to affect the rate of learning. There seems to be a greater effect from the pre-test scores than from the text type; when student scores were lower on the pre-test, they made greater improvements, so that even though their final percentage scores may also have been lower, they actually learned more. This becomes even clearer if we compare all of the pre-test scores with the percentage improvement between the pre-and post-test, as shown in Figure 3.
Figure 3. Inverse Variation of Pre-Test Scores with Percentage Improvement

Figure 3 compares the pre-test score for each book with the percentage improvement between the pre- and post-test for that book. It shows that the higher pre-test scores correlate with lower improvement percentages for both narrative and expository text types: When students scored higher on the pre-test, they had lower percentage improvement gains between the pre-test and the post-test. When students scored lower on the pre-test, they had higher percentage improvement gains on the post-test. This type of chart shows the results we expect when the normalized learning gain is the same for each text.

This holds true across all three reading groups. The one exception is *What Comes from Plants*, where students in the low reading group had a higher percentage of
improvement than for *Killer Croc*, in spite of having higher pre-test scores. The difference is not very great, though, and I think it results from the difficulty level of the two books: *Killer Croc* is a longer and more challenging book than *What Comes from Plants*, so students may have found it easier to improve their scores for *What Comes from Plants*.

### 4.1.3 Text Type Comparisons by Word Tier

Student scores on both pre- and post-tests demonstrated a direct correlation between scores and word tier as defined and analyzed by Cobb (2013) on http://www.lextutor.ca/vp/eng/. Students consistently scored highest on tier 1 words, lowest on tier 4 words, with scores on tier 2 and tier 3 words falling in between. For both the narrative and expository texts, the post-test scores were much closer together for tier 2-4 words, but the general trend remained the same.

Conversely, students made the greatest gains in percentage improvement on tier 4 words, and the smallest percentage gains on tier 1 words. This correlation held for both narratives and expository texts, except that the smallest percentage gains for expository texts were for tier 2 words rather than tier 1 words.

Figure 4 shows the pre- and post-test scores for each type of text, broken down by the related word tier.
Although the pre-test scores for the tier 1 words from narrative texts were higher than the pre-test scores for the tier 1 words from expository texts, the general trends are similar for narrative and expository texts on both the pre- and post-tests. Dividing the scores by text type and word tier indicates that the higher pre-test scores correlate with a lower percentage of improvement, while the lower pre-test scores correlate with a higher percentage of improvement. There was little difference between the percentage improvement on narrative and expository texts for any of the word tiers.

Students were more likely to have greater mastery of the tier 1 vocabulary words before encountering those words in the books, so it is not surprising that they scored highest on the pre-tests on questions related to tier 1 words. It is more surprising that the post-test scores are so close, regardless of the related word tier. This indicates that students were able to learn tier 2, 3, and 4 words to very similar levels of mastery, in spite of the fact that by definition, the tier 2 words are more commonly used than tier 3 or tier 4 words in general texts, and tier 3 words are more commonly used than tier 4 words in academic texts. This could be explained by the way these particular items were chosen. Although tier 3 and 4 words occur less commonly in general, all the words
chosen for testing were important, recurring words from the specific text being read, so that the relative frequency for the vocabulary words in that specific text was more similar for all of the words than it would be in a large corpus of texts.

4.2 Comparison of Vocabulary Improvement Scores by Question Type

In designing the tests, I included three questions related to each vocabulary word: a definition question, a sentence-completion question that was related to the text from which the vocabulary word was taken, and a sentence-completion question that was not related to the text. I expected the definition questions to show the greatest improvement, since they require the least complex knowledge; students simply needed to recall and recognize a definition to answer these questions correctly. I also expected that students would show greater improvement on the sentence-completion problems that were related to the texts than on the sentence-completion problems that were not related to the texts. I expected that the time reading and discussing the texts would result in text comprehension that could be applied to answer these questions more easily.

I found that students did show greater improvement for definition questions than for sentence-completion questions. However, students showed nearly identical improvement from pre- to post-tests for the two types of sentence-completion problems. I also found that students in the high reading group showed higher overall percentage improvement gains that students in the low reading group for the sentence-completion questions, regardless of whether the questions were related to the text or not.

4.2.1 General Comparison

Students scored higher on definition questions than sentence-completion questions on both pre- and post-tests, but there very little difference in pre- or post-test scores
between sentence-completion questions relating to the text and sentence-completion questions that were not related to the text. Figure 5 shows the pre- and post-test scores for each of the three question types.

![Bar chart showing pre-test and post-test scores for different question types.]

**Figure 5. Pre- and Post-Test Scores for Different Question Types**

Students scored higher on both the pre-tests and the post-tests on definition questions than on the sentence-completion questions, and they improved their scores by a greater amount for the definition questions. Overall, definition question scores improved by 29%, from 66% on the pre-tests to 95% on the post-tests. The combined scores for both types of sentence-completion questions improved by 22%, from 49% on the pre-tests to 71% on the post-tests. As Figure 5 shows, there was very little variation between the scores for sentence-completion problems that were related to the texts and sentence-completion problems that were unrelated to the text. This is not what I expected, since I had hypothesized that after reading the texts, students would be more likely to improve their scores on the questions that were related to the texts. It may be that the sentences did not include enough context for students to benefit from familiarity with the texts.

The higher improvement rates for definition questions as compared to sentence-completion questions contrasts with the inverse relationship between pre-test scores and
the percentage improvement discussed in section 4.1.2. When the scores are divided by question type, this relationship is no longer evident. Instead, the definition questions, where students had the highest pre-test scores, also show the highest improvement rates.

The type of question may also contribute to the percentage improvement, along with the pre-test scores. In Figure 6, separate trend lines are shown for the percentage improvements on each type of question, depending on the pre-test score.

Figure 6. Percentage Improvement Trends for Different Question Types

Students made the greater percentage improvement gains when they had the lowest pre-test scores on definition questions, and the percentage improvement for sentence-completion questions are consistently below the percentage improvements for definition questions with similar pre-test scores. This is expected, since the two types of questions were intended to test different types of student behaviors related to the vocabulary words. Definition questions require students to recognize the correct definition from
among a list of possibilities, so if students understand and remember the basic meaning of the word, they should be able to answer definition questions correctly. Sentence-completion questions require the student to choose a word that fits within a given context, so students have to know enough about the pragmatic use of the vocabulary words (and the other words that make up the context) to be able to synthesize the two.

This difference is evidence that the test questions are working as intended, showing that students gained knowledge about the basic meaning of the words, but not complex pragmatic knowledge.

4.2.2 Question Type Comparison by Text Type

The disparity in the percentage improvements between the different question types is not evident for both narrative and expository texts. Figure 7 shows how the pre- and post-test scores for each type of question compare between narrative texts and expository texts.

![Figure 7. Score Comparison for Different Question Types by Text Type](image)

<table>
<thead>
<tr>
<th>Question Type</th>
<th>Narrative</th>
<th>Expository</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition, Related to text</td>
<td>56%</td>
<td>42%</td>
</tr>
<tr>
<td>Definition, Unrelated to text</td>
<td>62%</td>
<td>43%</td>
</tr>
<tr>
<td>Sentence-Completion, Related to text</td>
<td>74%</td>
<td>66%</td>
</tr>
<tr>
<td>Sentence-Completion, Unrelated to text</td>
<td>51%</td>
<td>69%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre-Test Score</th>
<th>62%</th>
<th>56%</th>
<th>51%</th>
<th>70%</th>
<th>42%</th>
<th>43%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Test Score</td>
<td>96%</td>
<td>74%</td>
<td>74%</td>
<td>94%</td>
<td>66%</td>
<td>69%</td>
</tr>
</tbody>
</table>
Narrative texts display more of a disparity between improvement rates for the different question types than was evident in the overall comparison among the types of questions. For narrative texts, scores for definition questions improved by 34%, while scores for sentence-completion questions improved by only 18% for questions related to the text and 22% for questions unrelated to the text.

For expository texts, however, the improvement rates between the pre-test and the post-test scores were nearly identical: 24% for definition questions, 23% for sentence-completion questions related to the texts, and 25% for sentence-completion questions that were unrelated to the text. This, too, seems unusual. Why would there be a difference between the improvement rates based on text types depending on the type of question, when the text type did not affect improvement rates for any other types of data breakdowns? There does not seem to be any logical reason that students would learn word definitions at a greater rate from narrative texts, when the rates of improvement for sentence-completion questions are still similar. One of the groups of words may be more conceptually challenging than another, but further analysis would be needed to determine this.

Although the difference between the improvement rates for definition questions and sentence-completion questions contradicts the inverse relationship between pre-test scores and the percentage improvement discussed in section 4.1.2, the difference between the narrative and expository text improvement rates for definition questions can be explained by that relationship. When we separate out the definition questions and compare the pre-test scores with the percentage improvement, the same inverse relationship is evident within both types of questions. Pre-test scores for definition questions are compared with the percentage improvement for definition questions in Figure 8, and the same comparison for sentence-completion questions is shown in Figure 9.
Both Figure 8 and Figure 9 show the inverse relationship between pre-test scores and percentage improvement, regardless of text type. In both charts, lower pre-test scores correlate with higher improvement rates. The difference in Figure 7 shows between improvement rates for narrative and expository texts on definition questions probably is
not indicative of a difference in the way that students learn definitions from the two
types of texts, but is more the natural result of the different prior knowledge that
students had of the vocabulary words. This correlation indicates that the normalized
learning gain would be the same for each text. Students had higher pre-test scores for
definition questions related to expository texts than for definition questions related to
narrative texts, so it is normal for the improvement rates for definition questions to be
lower for expository texts than for narrative texts. There does not seem to be an effect
from the type of text on the improvement rates, since the difference between the
improvement rates reflects a difference in the pre-test scores.

4.2.3 Question Type Comparisons by Student Reading Group

Although the text type does not affect the improvement rates for different types of
assessment questions, the student reading group does affect the improvement rates for
different types of questions. Students in the high reading group scored better than
students in the low reading group on pre-tests for both definition questions and
sentence-completion questions. On the definition questions, high reading group pre-test
scores were 20% higher than low reading group pre-test scores. On the sentence-
completion questions, high reading group pre-test scores were 12% higher than low
reading group pre-test scores. On the post-test, both groups scored similarly on the
definition questions (98% for the low reading group and 95% for the high reading
group), but the gap between the two groups remained – and grew slightly larger – for
the sentence-completion questions (64% for the low reading group and 79% for the
high reading group). Figure 10 shows the pre- and post-test scores for both types of
questions, for both reading groups.
Based on the previous analysis showing that lower pre-test scores correlated with higher percentage improvements, none of the score comparisons in Figure 10 is surprising except that the low reading group students had a lower percentage improvement than the high reading group students on the sentence-completion questions. Since their pre-test scores were lower, we should expect that they would have a higher percentage improvement. Low reading group students demonstrated a higher percentage improvement for the definition questions, but not for the sentence-completion questions. In Figure 11, the trend lines from Figure 6 are separated by reading group.

Figure 10. Score Comparison for Different Reading Groups by Question Type
Figure 11. Trends for Percentage Improvement by Reading Group

Figure 11 shows that while the percentage improvement trends for the definition questions are similar for both reading groups, in spite of variation in the distribution of the pre-test scores, there is a discrepancy between the percentage improvements for the two reading groups for the sentence-completion questions. Students in the high reading group showed higher overall percentage improvement gains than students in the low reading group for the sentence-completion questions, even when pre-test scores were similar. This indicates that English reading ability may affect the improvement measured by some types of assessments. It could also indicate that students need to meet a certain threshold of English reading ability before they can apply vocabulary knowledge to this type of sentence-completion task.
4.2.4 Question Type Comparisons by Word Tier

When the pre- and post-test scores for each type of question are divided out by word tier, the same patterns are evident that were discussed in 4.1.3 and 4.2.1. Comparing the word tiers, the trend for the pre-test scores is unsurprising: students scored highest on the questions related to tier 1 words and lowest on questions related to tier 4 words, with scores on tier 2 and tier 3 words falling in between. Comparing the question types, students scored higher on definition questions than on sentence-completion questions. Figure 12 shows the pre- and post-test scores for each question type, divided by word tier.

![Figure 12. Pre- and Post-Test Scores by Question Type and Word Tier](image)

One noteworthy difference illustrated in Figure 12 is the consistency in the post-test scores for definition questions. Because the pre-test scores were lower for higher-tier words, we should expect there to be higher rates of improvement for those words as well. The consistently high post-test scores for definition questions for words across all
four tiers have implications for teaching vocabulary from different tiers. Students are likely to see the greatest gains when they earn less-frequently-used vocabulary through targeted reading. If texts can be found that use a tier 3 or tier 4 word repeatedly within the corpus, those texts can serve as a good way to introduce that type of vocabulary to students, and students are likely to learn the definitions of those words just as well as vocabulary that is more common. This means that introducing vocabulary through contextual reading may be a particularly good tool to use for new subject-matter vocabulary.

There were no discernible patterns differentiating sentence-completion questions that were related to the text from those that were unrelated to the text for any word tiers. For tier 1 words, students scored slightly higher on the post-test on sentence-completion questions that were not related to the text than on sentence-completion questions that were related to the text. Post-test scores for tier 2 and tier 4 words were within a percentage point of each other for sentence completion questions related to the text and sentence-completion questions that were unrelated to the text. For tier 3 words, students scored higher on sentence-completion questions that were related to the text.

It seems that students were able to learn definitions for all the words to the same level of mastery, regardless of the word tier. They were not able to complete sentences with the words to the same level of mastery, but their improvement rates for the sentence-completion questions vary as expected based on their pre-test scores: Students showed more improvement when their pre-test scores were lower and less improvement when their pre-test scores were higher.

4.3 Wrong Answer Analysis

For the sentence-completion questions, in addition to recording whether each response was correct or incorrect, I also recorded which distractors students selected
when they chose incorrect responses. I analyzed those responses to determine whether
the types of errors that students made changed from the pre-test to the post-test. I
hypothesized that students might use grammatical information they learned about the
vocabulary items while reading to choose grammatically plausible wrong answers. For
instance, if students chose the incorrect word on both the pre-test and the post-test, but
the word they chose on the pre-test was the incorrect part of speech and the word
chosen on the post-test was the correct part of speech, that may indicate increased
vocabulary awareness on some level. If so, I expected students to choose distractors
with the same grammatical form as the correct answer more often on the post-tests than
on the pre-tests.

4.3.1 Overall Changes in the Distractors Chosen

Overall, I found that the percentage of the time that students chose a grammatically
plausible wrong answer stayed nearly constant from the pre-tests to the post-tests. This
indicates that either students are not gaining grammatical information about the
vocabulary items, or that they are simply relying more on semantic features than on
grammatical clues when answering sentence-completion questions. I did not analyze the
vocabulary items for semantic similarity, but it would be interesting to analyze the
responses based on semantic similarity in the same way that I analyzed them to check
for grammatical similarity.

On the pre-tests, there were 724 incorrect answers. Of those, there were 456
incorrect answers where the form of at least one distractor was the same as the correct
answer, and the form of at least one distractor was different from the correct answer.
Students chose a distractor with the correct form 235 times (51.5% of the time). On the
post-tests, there were 404 incorrect answers. Of those, there were 259 incorrect answers
where distractors included both words that were the same form as the correct answer.
and words that were different in form from the correct answer. Students chose a distractor with the correct form 137 times (52.9% of the time).

4.3.2 Changes in Distractors Chosen for Questions Relating to Different Text Types

For narrative texts, distractors with the correct form were selected 44.3% of the time on the pre-tests and 48.6% of the time on the post-tests. For expository texts, distractors with the correct form were selected 58.8% of the time on the pre-tests and 58.0% of the time on the post-tests. Overall, students chose distractors with the correct form more often for expository texts, but the difference is small. Figure 13 shows the relative percentages of the distractors chosen with correct and incorrect grammatical forms on the pre-tests and post-tests for both types of texts.

![Figure 13. Grammatical Form of Distractors Chosen for Different Text Types](image)

Table: Grammatically Correct and Incorrect Distractors Selected

<table>
<thead>
<tr>
<th></th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Pre-Test</th>
<th>Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Narrative</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grammatically Incorrect Distractors Selected</td>
<td>127</td>
<td>72</td>
<td>94</td>
<td>50</td>
</tr>
<tr>
<td>Grammatically Correct Distractors Selected</td>
<td>101</td>
<td>68</td>
<td>134</td>
<td>69</td>
</tr>
<tr>
<td><strong>Expository</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Although students chose the correct form more often for expository texts overall, the percentage of the time that they chose the correct form for a narrative text improved from the pre-test to the post-test, while is actually slightly decreased for expository texts. Text type does not seem to have affected the grammatical knowledge that
students acquired about vocabulary, or at least not in a way that affected their decisions on sentence-completion questions.

4.3.3 Changes in Distractors Chosen for Different Question Types

Students selected distractors with the correct form for questions related to the text 51.9% of the time on the pre-tests and 47.6% of the time on post-tests. For questions not related to the texts, students chose distractors with the correct form 51.2% of the time on the pre-tests and 57.9% of the time on the post-tests. Definition questions were not compared, since the answers for definition questions were phrases and definition questions did not contain the same contextual grammatical clues that sentence-completion questions contain.

Figure 14 shows the relative percentages of the grammatically correct and grammatically incorrect distractors chosen on the pre- and post-tests for each type of sentence-completion question.

<table>
<thead>
<tr>
<th>Grammatically Incorrect Distractors Selected</th>
<th>Pre-Test Related to the text</th>
<th>Post-Test Related to the text</th>
<th>Pre-Test Not Related to the Text</th>
<th>Post-Test Not Related to the Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grammatically Correct Distractors Selected</td>
<td>107</td>
<td>60</td>
<td>128</td>
<td>77</td>
</tr>
</tbody>
</table>

Figure 14. Grammatical Form of Distractors Chosen for Different Question Types

I expected students to use grammatical clues more for the questions that were not related to the text, since the semantic information in these questions was less likely to
be as familiar. Figure 14 shows that this may have been the case, since the percentage of grammatically correct distractors decreased from the pre-test to the post-test for questions related to the texts and increased for questions that were not related to the texts. However, the percentage change in both cases was minimal. As in other analyses comparing the sentence-completion questions related to the texts with the sentence-completion questions that were not related to the texts, the question’s relationship does not have much effect on student scores. Students did not demonstrate any significant differences in the grammatical knowledge gained or used to answer the different types of questions.

4.3.4 Changes in Distractors Chosen by Students in Different Reading Groups

Students in the low reading group selected distractors that were the correct form 41.3% of the time on the pre-tests and 39.7% of the time on the post-tests. Students in the high reading group selected distractors that were the correct form 58.9% of the time on the pre-tests and 62.0% of the time on the post-tests. Figure 15 shows the relative percentages of the grammatically correct and grammatically incorrect distractors chosen on the pre- and post-tests for by students in the low and high reading groups.
As in 4.1.2 and 4.2.3, not all students were included in the reading group analysis, because I expected any differences to be most evident by comparing the high and low reading groups, since they represent the two ends of the spectrum of English reading ability for students in this class. There is a notable difference between the two reading groups, with students in the high reading group choosing grammatically correct distractors twenty percent more often than students in the low reading group. However, there is virtually no change in the percentage of the time that students in either group chose grammatically correct distractors from the pre-test to the post-test. Although reading group seems to affect how well students use grammatical clues to answer sentence-completion questions, it does not affect how much grammatical information they learn and apply.
CHAPTER 5
DISCUSSION

This study seeks to provide new research to help ELL professionals choose texts and assessment methods that best help students learn new vocabulary and accurately measure their learning. Some of the factors analyzed in this study have also been included in previous research. Looking at the way that this study and previous research fit together provides a fuller picture of the types of texts and questions that are most effective, as well as the ways in which students’ English reading ability and teachers’ teaching methods may affect student outcomes. Several factors that may have affected learning outcomes were not analyzed in this study, and the affects from those factors should be explored further in future research.

5.1 Implications Related to Incidental Vocabulary Acquisition Research

Previous research has investigated different aspects of the ways that text type, question type, student reading groups, and classroom teaching methods affect student vocabulary outcomes. In some areas, this study builds on the results of previous research. In other areas, it would be helpful to have further research clarify how the implications of various research studies, including this one, interact.

5.1.1 Question Type

The general goal of English language education for all ELL students is that they be able to use English to communicate and function successfully in school and future career situations. Written assessments may not always be the best way to evaluate
students’ ability to use language, since not all school and work communication is conducted via writing. Further, the types of communication tasks for which ELL language education is intended to prepare students are unlikely to include word-definition questions or sentence completion questions. However, these types of assessments can tell us how well students can recognize word definitions and construct sentences, which are basic sub-skills students will need in order to be able to function successfully.

It is important to recognize, however, that the type of assessment may affect the students’ scores. Regardless of whether students score well or score poorly, it is crucial to bear in mind what exact skills they are being tested on. This study demonstrates that questions that test lower-level cognitive skills by asking students to identify a correct definition resulted in higher scores and a higher rate of improvement than questions testing higher-level cognitive skills by asking students to identify a word based on sentence context. This study does not indicate whether the difference reflects a difference in the types of learning that students are able to achieve or whether the difference results solely from the difference in the assessment format itself. It may be that the definition questions better assess learning, while the sentence-completion questions actually confused students by introducing unfamiliar contexts and additional vocabulary.

Abedi (2010) presents other evidence that assessment format affects ELL student scores. He found that eighth grade ELL students tended to select distractors that contained vocabulary that is more academic. In this case, the effect relates to the way the answer choices are constructed, more than the type of question. Abedi also found that question and answer length affect ELL testing outcomes. When the question text is longer than three lines and any of the answer choices are longer than one line, ELL students perform “substantially lower” than other students. Again, this indicates that the construction of both the answer choices and the question may skew test results.
Abedi’s recommendation is that assessments for ELL audiences should use modified language to reduce sentence complexity and remove unfamiliar vocabulary and topics that are not germane to the skill or knowledge being assessed.

Of course, the ideal solution to the assessment problem would be to assess learners based on real-life scenarios, but that is seldom possible. School assessments are confined by time and place, so while a student’s actual functional success may not be determined until several years later, some type of immediate assessment is necessary to gauge whether or not students are moving toward that type of functional success.

One possible solution, recommended by the government of Alberta, Canada, is to use multiple assessment strategies to gain a more complete picture of a student’s learning. “Developmentally appropriate assessment calls for the use of a range of assessment strategies because English language learners need a variety of ways to demonstrate their understanding. The lower the language proficiency, the more important it is to use assessment techniques beyond pencil and paper tasks” (Alberta Education 2013). While using multiple assessment strategies may provide a more complete picture of learning, it may also increase the number of ways that the assessments themselves affect student outcomes. Further study is needed to compare the ways that oral and task-based assessment strategies affect student scores. In addition, research is needed to see what differences there are in the ways that those types of assessments measure learning and whether students tend to show greater improvement or less improvement, in the same way that definition questions resulted in greater demonstrated improvement than sentence-completion questions in this study.

5.1.2 English Reading Ability

Several previous studies have found correlations between various aspects of students’ language development and their ability to learn and acquire literacy skills in another language. Regarding L1 language development, students have more success in
developing L2 literacy when their literacy skills have already been established in the L1 first (Snow et al. 1998). Even if language development focuses only on the L2, developing oral language skills in the L2 first tends to result in better literacy outcomes for ELL students (Snow et al. 1998). Regarding vocabulary acquisition, students with more English vocabulary gain additional English vocabulary more quickly and easily than students with less initial vocabulary (Sénéchal, Thomas, and Monker 1995).

In the present study, I did not assess students’ L1 literacy abilities or their English oral language skills, but the students were placed into different reading groups based on Lexile reader measurements in English. Based on the findings of these previous studies, I expected students in the high reading group to show a greater improvement from the pre-test to the post-test than students in the low reading group. The only results that show a greater absolute improvement for the high reading group, however, were the results related to analyzing sentence-completion question score improvements from pre-to post-test by reading group, where the gap between the high and low reading group scores increased from twelve percent to fifteen percent.

This is the one area where normalizing the learning gain rates is helpful. Normalizing the learning gain rates explains why the data seems to suggest that students with less initial English reading ability learned better than students with more initial English reading ability. To normalize the learning gain scores, we can divide the absolute gain (post-test score minus pre-test score) by the maximum possible gain (maximum possible score - pretest score) to find the normalized gain. When we apply the same formula to the data from this study, students in the high reading group are shown to have greater gains. Students in the low reading group improved from 47% on the pre-tests to 75% on the post-tests, a 29% improvement. Students in the high reading group improved from 66% on the pre-tests to 85% on the post-tests, a 20% improvement. However, applying the normalized learning gain formula means that
students in the low reading group gained only 54% of the possible improvement, while students in the high reading group gained 57% of the possible improvement. As a result, this study should not be interpreted as contradicting previous research that indicates that students with more initial vocabulary are able to learn new vocabulary more easily that students with less initial vocabulary.

Applying the same normalized learning gain formula to the data related to different question types does not produce similar results, however. The results for sentence-completion questions still show a greater learning gain for students in the high reading group than for students in the low reading group: Students in the low reading group improved by 21% on the sentence-completion questions, which was 37% of the possible improvement. Students in the high reading group improved by 24% on the sentence-completion questions, which was 54% of the possible improvement. The normalized learning gain score for sentence-completion questions reinforces the conclusion from 4.2.3 that English reading ability, in addition to pre-test score, is a predictor of the percentage of improvement for sentence-completion questions. When we apply the normalized learning gain formula to the definition questions, however, we see the opposite results. For definition questions, students in the low reading group improved by 41% from the pre-tests to the posts-tests, which was 94% of the possible improvement. Students in the high reading group improved by 19%, which was only 79% of the possible improvement. This underscores the importance of using targeted contextual reading as a teaching tool to help students learn basic word definitions, especially for challenging or uncommon vocabulary.

From both types of analysis, it seems clear that the high reading group students were better able to apply the vocabulary words they learned to sentence-completion questions, and both the high and low reading groups were able to identify definitions with high levels of mastery. For future studies, it would be helpful to compare a wider variety of question types to see if there are other differences in learning gains between
students with different English reading abilities depending on the way they are assessed.

5.1.3 Teaching Methods

Previous research has demonstrated that several classroom factors may improve student outcomes for vocabulary acquisition from reading, including repeated readings, repeated vocabulary exposures, use of images, and group interactions. This section describes how these factors informed the classroom practices used during this study, how the results of this research reinforce or contradict previous research, and what further research would be helpful in these areas.

5.1.3.1 Repeated Readings and Repeated Vocabulary Exposures

In this study, except in cases where the vocabulary words were important terms highlighted and defined within the text by the author or publisher, all of the vocabulary words were chosen from words with a high frequency within the text. This is because research has shown that repeated exposure to vocabulary increases learning. Collins (2010) reports that there is evidence that students can and do learn vocabulary from single exposures, but there is even more evidence that repetition improves learning. Other studies have found that repeated readings improve vocabulary acquisition (Sénéchal 1997; Robbins and Ehri 1994).

As discussed in 4.1.3, the frequency of vocabulary items in a specific text may have a more direct effect on how well students learn those words than the frequency overall. Although tier 3 and 4 words may be “harder” vocabulary words, if they are repeated within a specific corpus, students can achieve as much success in learning those words as more commonly repeated tier 1 and tier 2 words. Robbins and Ehri (1994) found that children were more likely to learn a word from hearing it in a story if the word was repeated four times than if it was repeated only twice. This is the case with monolinguals, and it seems to apply to ELL students, too. In studying a specific reading
software (Fluent Reader) with ELL students, Willcutt (2004) found that the program, which makes it easy for students to re-read a text before answering comprehension questions, resulted in more fluent reading than traditional reading instruction. She hypothesizes: “This might be because ELL students benefit in particular from the repeated reading element of the program. The fact that Fluent Reader provides an opportunity to read texts repeatedly may allow English Language Learners to gain more exposure to the language, its structure, and to familiarize themselves with vocabulary” (p. 26).

It is worth noting that in the current study, every individual student showed some level of improvement from the pre-tests to the post-tests. Repeated exposure to the vocabulary items being tested almost certainly is responsible for some portion of their learning success.

This study and the studies by Collins (2010) and Willcutt (2004) all focused on repetition based on a single text. Future research should determine whether the effect of repetition is different when the repetition occurs across multiple texts. In this study, students learned words that have a lower overall frequency in English equally well as words that have a higher overall frequency, but the number of exposures between the pre-tests and the post-tests were similar for all the vocabulary items, regardless of their overall frequency in the language. It would be helpful to know whether or not that remains true if the exposures come from a variety of texts, rather than repetition within a single text.

5.1.3.2 Use of Images

The texts used for this study varied in how images were used along with the texts. Most of the books included illustrations or photographs, but The Juvie Three and Red Midnight did not. I did not record data regarding the presence or frequency of images related to the vocabulary words. It is possible that differences among the texts in the way that images were used affected the results, since previous studies have
demonstrated a link between images and L2 vocabulary acquisition. “Presenting new vocabulary with graphics simultaneously will aid in supplying the missing link between foreign words and familiar objects or ideas” (Willcutt 2004). This statement assumes that the vocabulary applies to familiar objects or ideas, so it is not clear whether Willcutt expects any benefit from using images to introduce new vocabulary that relates to objects or ideas that are unfamiliar to the learners.

It may also be that image use affects student outcomes disproportionately depending on the types of assessments used. Willcutt (2004) proposed using graphics to help ELL students apply vocabulary, which is more likely to relate to assessments like the sentence-completion portion of this study where the sentences were not related to the text. Other assessments that ask students to apply vocabulary may be assessments that require written or oral descriptions, asking students to generate new sentences using the vocabulary rather than simply defining vocabulary or completing sentences. Cetin and Flamand (2012) found that "students whose class was decorated with posters performed significantly better in the vocabulary," but they report that the vocabulary scores improved only for questions asking students to match vocabulary to pictures. None of these types of assessments were used in this study.

It is not clear whether the types of assessments used in this study would be likely to demonstrate any difference based on the use of images. The mid reading group’s improvement rate for The Juvie Three was 14%, while their improvement rates for the other books were 6% (Killer Plants), 35% (Natural Disasters), and 40% (In the Line of Fire). For the high reading group, their improvement rate for Red Midnight was 14%, while their improvement rates for the other books were 19% (Lightning), 21% (The Cloning Controversy), and 30% (Stranger in His Own Land). In both cases, the improvement rates are on the low end for that reading group, but the pre-test scores were also high: The pre-test score for The Juvie Three was 75%, compared to the mid reading group’s average pre-test score of 60%, and the pre-test score for Red Midnight
was 77%, compared to the high reading group’s average pre-test score of 69%. Since the pre-test scores for these books were higher than average for their reading groups, the lower than average improvement rates are expected, and there is no obvious effect from the lack of images.

It would be helpful for future vocabulary research to investigate what specific types of assessments and skills are linked with better outcomes from the use of images along with textual use of vocabulary.

5.1.3.3 Interacting with the Text

Previous research has shown that the amount of interaction that children have with a text and with a facilitator or reader affects how well they comprehend the text (Collins 2010) and their level of vocabulary acquisition from a text (Quiroz, Snow, and Zhao 2010). In this study, students read in groups of four to eight, but the specific group sizes were not recorded nor was the data analyzed to determine whether the group size affected the level of learning. Group size affects the amount of time that each individual student spends reading aloud in the group, since when there are fewer students, each student is likely to be required to read more. Individual students in smaller groups are also likely to have more direct interaction with the facilitator. Also, the research by Quiroz, Snow, and Zhao (2010) found that some types of interaction were more beneficial for vocabulary development than others. In their study, “mothers who asked more labeling questions had children who scored higher on vocabulary scores in both Spanish and English” (p. 395). All the students in this study were regularly asked questions during the reading group sessions, but I did not track or record what kinds of questions were asked. Given the students’ ages, though, labeling questions would have been inappropriately juvenile, so the questions were more often related to word definitions, examples, and text comprehension.

Future studies in this area should verify whether the findings related to younger children’s vocabulary acquisition also apply to older students and how different types of
interaction with a facilitator affect outcomes for older students. It would also be helpful to know whether the ideal group size for these types of interactions is similar for older students as for younger students, and whether the students’ levels of language or literacy skills affect the ideal group size. Since smaller group sizes are likely to result in each student spending more time reading aloud and being asked more questions, it would be helpful to know when this type of interaction yields the greatest benefit for students. For instance, are different group sizes better for different ages? Is it more helpful for students with less English ability to work in smaller groups? Do facilitators tend to ask different types of questions of students based on their reading ability? Are different types of questions more helpful for students in different reading abilities?

5.2 Limitations

Previous research has made it clear that several factors may affect learning outcomes. In this study, I found that some factors that had not previously been factors had little effect on learning outcomes. There was little difference between the improvement rates for text type (narrative or expository) or from the vocabulary word tier. Other factors did affect learning: There were differences in students’ improvement based on the question type, and for sentence-completion questions, there were differences between students in the high and low reading groups. There were also differences between students in different reading groups in their selection of grammatically correct responses (high reading group students chose grammatically correct distractors more often than did low reading group students), but this difference applied equally for both pre- and post-tests, so the students’ rate of learning does not seem to have been affected.

Some factors that may have affected students’ learning were not analyzed, and those factors should be taken into account if further research is done in this area. Those
factors include student language and cultural backgrounds, students’ socio-economic status, and the class processes in the classroom where this study was conducted.

5.2.1 Participant Language Backgrounds

The exact make-up of an ELL classroom varies from one geographic region to another, from year to year, from school to school, and even from class to class. Because of this, undertaking a study like this one with a truly representative sample would be quite challenging, and would likely require multi-state participation and cooperation from dozens, if not hundreds, of teachers. Even then, changes from year to year in immigration changes could negate the wide applicability of the results over time.

My study results were likely affected to some degree by the unique make-up of the group of students in the study. There was a high percentage of the group with a Nepali-speaking Bhutanese background, so that specific language and cultural background may have affected the results. As Porto (2010) notes, “cultural and identity issues permeate all learning,” and especially language learning (p. 47). However, when I filtered my top-level analysis reports to include only the Bhutanese students, I did not observe any obviously skewed results. Since including only the Bhutanese students (or not including all of the Bhutanese students) would have significantly reduced my sample size, I chose to include all students in the analyses presented in this paper.

The results may also have been affected by the amount of time students have spent in the U.S. and by their oral and written proficiency levels in their respective L1s. Since I did not collect this student demographical information, I cannot conduct data analyses related to those factors. For future studies, it would be helpful to compare the time spent in the U.S., the time spent studying English, and the students’ L1 reading abilities to know how these factors are inter-related and whether any one of them has a greater effect on students’ ability to acquire new English vocabulary.
5.2.2 Participant Socio-Economic Status

Socio-economic status (SES) factors may also have affected the study results. I did not survey students or gather any data related to individual students’ socio-economic status. Disparities within the group may have affected the group’s overall results or the results of specific subsets of students compared in my analysis. For this specific group of students, socio-economic factors tend to be similar for students from the same language and cultural backgrounds, since families from the same backgrounds have often immigrated to this area for the same reasons. For instance, the Bhutanese students have mostly come to the U.S. as refugees after ethnic Nepalis were forced out of the country (Global Friends Coalition 2013).

Better school achievement by some groups of L2 children may be explained by the different reasons or SES factors resulting in their families’ immigration (Goldenberg, Rueda, and August 2008). Since differences in SES factors for this group of students are most likely parallel with their differences in language and cultural backgrounds, and the top-level study results were similar for students in the largest language and culture group from those from other backgrounds, it seems unlikely that SES differences among the students in this study have significantly affected the study results. August and Shanahan (2008b) note that "there is surprisingly little evidence for the impact of sociocultural variables on literacy learning" (p.8).

However, socio-economic factors may limit the applicability of these results to other groups of students. There are many reasons that students in the U.S. may be in ELL programs, and the students in this study do not necessarily reflect the full range of ELL participant experiences across the U.S. The high number of ELL students in the Grand Forks area who have relocated here as part of refugee programs may mean that their collective language learning experiences are different from other groups of ELL students who are born in the U.S. or relocate to the U.S. for other reasons.
Even more caution should be applied in generalizing the results from this study to L2 learners in other language situations, whether in the U.S. or in other countries. It is unclear if the same principles would apply or the same effects occur when students from a majority language study another language, or whether the same results would be found when the L2 is not English.

5.2.3 Classroom Factors

Several classroom factors may also have affected the results of this study. This study was conducted in a normal school setting over several months, and not all students were present to participate in the group reading each day. Since the vocabulary items were chosen from the texts and students were exposed to the vocabulary while reading the texts in groups, some students likely had fewer exposures to specific vocabulary items than other students did. The number of exposures each student had for different vocabulary items may also have been affected by reading they did outside the class. Students were free to take the texts home with them, but I did not track or ask them to report how much they read at home. If some students re-read some of the texts at home, they may have scored better on those post-tests because of the extra repeated readings.

Also, normal discussion, practice, and review activities were completed in the classroom. These activities are intended to increase learning, so it is likely that they affected the study results, too. Although this study borrowed from some of the research on incidental learning, the learning that took place during this study was not truly incidental. Through pre-tests and classroom activities, students knew which vocabulary items were being tested. Their improvement from pre-test to post-test (or lack thereof) may be more a direct result of their classroom participation or individual study habits than the factors analyzed here.
Another classroom factor that may have affected the study results is the way in which students were tested. I created the tests for this study based on the texts and vocabulary items we chose to include. It would be helpful to compare how the same factors affect results for standardized testing instruments.

Finally, all of the tests, both pre-tests and post-tests, were written. Students may have demonstrated different levels of learning if we had tested them orally instead of or in addition to the written tests. In a study that compared the reading ability of bilinguals and monolinguals, Mumtaz and Humphreys (2001) found that bilinguals did better at reading regular words and non-words, but worse at reading irregular words, even though they scored equally well at defining the irregular words when hearing them auditorily. Specific vocabulary items included in this study may have been more challenging for students to recognize in a written form, even if they had gained semantic and pragmatic knowledge of the word during the group reading and discussion, since those activities included auditory input instead of just visual input. This factor may have been at least partially mitigated by allowing the teacher and reading assistants to read the questions aloud for individual students who requested help during testing. If a student did not ask for help, though, we may have missed an opportunity to assess that student’s vocabulary acquisition correctly, because the test required that vocabulary knowledge be demonstrated through literacy.
CHAPTER 6
CONCLUSION

The results of this study have separate implications for the ways that ELL teachers and content area teachers assess ELL students. Both groups of teachers should pay careful attention to the way that their choice of assessment may inaccurately reflect what students know and what they have learned, either by suggesting that students are proficient in using vocabulary when they are not, or by indicating that students do not know vocabulary that they are familiar with to some extent.

6.1 Implications for ELL Teachers

For ELL teachers, the results of this study mean that teachers should focus on students’ initial reading ability and the knowledge that they already have about vocabulary words when setting achievement goals for students. Given the effect of the pre-test scores on students’ post-test scores, it seems that using a one-size-fits-all test at the conclusion of a teaching unit may not accurately reflect how much students learn. Pre-testing is important if you are concerned about how much people learn and grow.

However, the way in which students are evaluated on standardized tests is a static measure of success, judging what the student is able to do rather than how much more the student can do than they previously could. Students who start with very little knowledge may still be considered “failing” if they learn a substantial amount but not enough to score above the targeted test score. The way that ELL teachers determine their students’ needs, teach, and then assess them depends on how schools and teachers recognize and measure success. If the measure of success is how much a student learns,
then pre-testing is crucial. If the measure of success is a students’ score on a
standardized test, pre-testing may not seem as important.

Pre-testing can still be helpful for vocabulary teaching, though. This study found
that students were able to learn vocabulary word definitions from all tiers equally well
when they were given multiple exposures to the words. Pre-testing can help teachers
identify which words students are already familiar with; then the teacher can
intentionally use texts that include multiple instances of the words that students still
need to learn. By using pre-testing to identify the areas where students are weakest,
teachers will be able to focus their efforts on those areas, which will increase both
learning and final scores on standardized tests.

The results of this study related to English reading ability and question type
(discussed in 4.2.3) also suggest that ELL teachers should pay close attention to the
types of assessments used to measure students’ vocabulary. Simply using multiple-
choice definition questions may mask a students’ inability to use a word correctly in
context, while using only sentence-completion type questions may miss a student’s basic
semantic knowledge of a word. The effects of the question type also vary with the
students' reading group, so it is important for ELL teachers to make sure that assessment
styles are matched to students’ overall language ability.

6.2 Implications for Content Area Teachers who Serve ELLs

ELL specialists are not the only teachers who interact with ELL students. Many
content area teachers teach subjects like science, math, and history to classes that
include ELL students. This study suggests that ELL students can learn vocabulary
specific to a subject matter through the same methods that they learn other English
vocabulary, so content area teachers should use the same techniques to teach technical
terms that ELL teachers use to teach vocabulary.
The consistently high post-test scores for definition questions discussed in 4.2.4 also indicate that contextual reading can be a good tool to introduce less common content area vocabulary for ELL students. Prior to starting a new unit in chemistry, for instance, if students can read and discuss a text that includes multiple occurrences of the key new vocabulary terms, they are likely to learn the definitions of those terms just as well as they learn other more-common words. For the purpose of introducing new vocabulary to ELL students, if the text as a whole is written at an appropriate level for the student’s English reading ability, important terms that students are unlikely to be familiar with from previous experience can be repeated within the text to allow students to learn their meanings in context.

The consistently high post-test scores for definition questions point out an advantage in using contextual reading to teach the basic meanings of a word, but the fact that the same high post-test scores were not achieved on the sentence-completion questions indicate a warning. Content area teachers should pay close attention to the types of assessments they use to measure students’ knowledge. Students with low English reading ability may be unable to answer questions in more linguistically challenging formats, even if they know the basic information the question is intended to assess. Abedi (2010) makes several practical suggestions for modifying question text to make it less linguistically challenging. In addition, content area teachers should consider whether the type of question itself needs to be changed to allow all students to accurately demonstrate what they know.

Finally, content area teachers should be particularly careful about grammatical clues in questions. The results analyzed in 4.3 suggest that sentence-completion questions where some distractors are grammatically appropriate and other distractors are not may put ELL students at a disadvantage, especially ELL students with the lowest English reading ability. Comparative research would be necessary to demonstrate that native English speakers would learn and apply more grammatical information related to
new vocabulary, but this research at least indicates that ELL students do not apply new grammatical knowledge to sentence-completion answer selection.
APPENDICES
APPENDIX A

TEXTS


APPENDIX B
TESTS
Part 1: For each word, choose the word or phrase that means the same thing.

Explosion
a. Being distressed
b. Burning building
c. Local official
d. Sudden loud breaking apart

Governor
a. Ancestor
b. Invasion
c. Leader of a state or province
d. Stack of books

Guest
a. Government worker
b. Librarian
c. Person invited to visit or stay with someone
d. Stolen goods

Irreplaceable
a. Exhausted
b. Hurrying
c. Not noticeable
d. Too valuable for something else to be able to be used

Smoke
a. Another way to do something
b. Cloud of gas produced when something burns
c. Noise from several blocks away
d. Something that’s destroyed in a war

Treasure
a. Something that moves fast
b. Something valuable
c. Stack of books
d. Window

Trunk
a. Back of a car
b. Records of a culture
c. The inside of a library
d. Wasted time

Worry
a. Feeling of concern
b. Joy
c. Painful experience
d. Sleepiness

Part 2: Choose the best word to complete each sentence.

1. __________ from the campfire stung my eyes.
   a. Smoke
   b. Treasure
   c. Trunk
   d. Worry
2. Alia carried the books out of the library, loaded them into the _________ of the car, and went back for more.
   a. Smoke
   b. Treasure
   c. Trunk
   d. Worry

3. Alia filled her house with books. Stacks of books filled the closets, lined the hall, and filled the _________ room.
   a. Guest
   b. Irreplaceable
   c. Smoke
   d. Worry

4. Alia met with a local office at the office of the _________ of Basra to ask for permission to move the books out of the library so they wouldn’t be destroyed in the war.
   a. Governor
   b. Smoke
   c. Trunk
   d. Worry

5. Clouds of _________ from the explosion filled the air.
   a. Governor
   b. Smoke
   c. Trunk
   d. Worry

6. If the books were destroyed, they would lose the _________ collective memory of their people.
   a. Guest
   b. Irreplaceable
   c. Smoke
   d. Worry

7. Knowing about the library’s history helps Alia appreciate the _________ that surround her.
   a. Explosions
   b. Smoke
   c. Treasures
   d. Worries

8. Legend says the pirates buried their _________ on the island, but no one has ever found it.
   a. Explosions
   b. Irreplaceable
   c. Smoke
   d. Treasure
9. Only members and invited ______ are allowed inside the banquet hall.
   a. Guests
   b. Irreplaceable
   c. Smoke
   d. Worries

10. She packed the old baby clothes into the ______ and closed the lid.
    a. Governor
    b. Smoke
    c. Trunk
    d. Worry

11. That man is the chairman of the board of ______ at the school.
    a. Governors
    b. Smoke
    c. Trunks
    d. Worry

12. The ancient woodlands are ______ and must be protected.
    a. Explosions
    b. Governors
    c. Irreplaceable
    d. Worries

13. The island was rocked by a series of volcanic ______.
    a. Explosions
    b. Governors
    c. Guests
    d. Worries

14. We didn't tell you about the accident because we didn't want to make you ______.
    a. Explode
    b. Governor
    c. Guest
    d. Worry

15. While Alia drove to the library, she heard the sounds of war in the distance: gunfire and ______.
    a. Explosions
    b. Governors
    c. Guests
    d. Worries

16. With each new report of the coming invasion, Alia's ______ increase. Often, she discusses her fears with her husband.
    a. Explosions
    b. Governors
    c. Guests
    d. Worries
Disaster

Part 1: For each word, choose the word or phrase that means the same thing:

Aid
a. completely destroyed
b. giant
c. help
d. hide

Massive
a. deadly
b. fast
c. flat
d. large

Damage
a. books
b. Climb a tree
c. Form
d. Harm

Survivor
a. area where many tornadoes happen
b. giant wave
c. someone who lives through a disaster
d. wall to keep out water

Escape
a. break free
b. build a home
c. having nothing to eat
d. hurt

Warning
a. a better life
b. a kind of bike
c. ceiling
d. something that tells people about a problem

Part 2: Choose the best word to complete each sentence:

1. Because college is so expensive, many students require financial __________.
   a. Aid
d. Massive
b. Damage
e. Survivor
c. Escape f. Warning

2. Because tornadoes can form in minutes, people get very little __________ that they’re coming.
   a. Aid
e. Survivor
b. Damage f. Warning
c. Escape
d. Massive
3. For years cars have had __________ systems to let drivers know when they're about to back into something.
   a. Aid
   b. Damage
   c. Escape
   d. Massive
   e. Survivor
   f. Warning

4. In 2004, an earthquake in the Indian Ocean caused a(n) __________, 30-foot-high wave to hit Sumatra.
   a. Aid
   b. Damage
   c. Escape
   d. Massive
   e. Survivor
   f. Warning

5. Only a few people managed to __________ from the burning building.
   a. Aid
   b. Damage
   c. Escape
   d. Massive
   e. Survivor
   f. Warning

6. People around the world sent money, food, and other __________ to people who needed it after the tsunami.
   a. Aid
   b. Damage
   c. Escape
   d. Massive
   e. Survivors
   f. Warnings

7. Some tsunami __________ stayed at a camp where they could get food to eat and a place to sleep, because they didn’t have homes or jobs any more.
   a. Aid
   b. Damage
   c. Escape
   d. Massive
   e. Survivors
   f. Warnings

8. The cancer __________ sent cards to encourage other women who were in the hospital with life-threatening diseases.
   a. Aid
   b. Damage
   c. Escape
   d. Massive
   e. Survivor
   f. Warning

9. The items were carefully wrapped to protect them from __________ during shipping.
   a. Aid
   b. Damage
   c. Escape
   d. Massive
   e. Survivors
   f. Warnings

10. The twister blew down trees, tossed around cars, tore up homes, and caused lots of __________.
    a. Aid
    b. Damage
    c. Escape
    d. Massive
    e. Survivors
    f. Warnings

11. When a tsunami hit Sumatra, people climbed trees to __________ the water.
    a. Aid
    b. Damage
    c. Escape
    d. Massive
    e. Survivor
    f. Warning
12. You can find a(n) __________ amount of information on the Internet.

   a. Aid                        d. Massive
   b. Damage                    e. Survivor
   c. Escape                    f. Warning
Domitila

Part 1: For each word, choose the word or phrase that means the same thing.

Design
a. Hold with the hands
b. Sandals
c. Strength
d. The way something is made

Empty
a. Containing nothing
b. Forgotten
c. Loving
d. Rubbed

Generous
a. Giving or sharing freely
b. Grand
c. Old
d. Thin and handsome

Governor
a. Leader of a state or province
b. Mansion
c. Room where a family gathers to eat
d. Son

Grave
a. Carving
b. Event repeated every year
c. Hole in the ground for burying a dead body
d. Money pouch

Leather
a. Animal skin used to make clothes, shoes, and furniture
b. Dark sky
c. Huge
d. Young man

Suddenly
a. Fit for a king
b. In secret
c. Quickly and unexpectedly
d. With talent

Weed
a. Banquet
b. Journey
c. Plant that’s not wanted
d. Shady bush

Widow
a. Daughter
b. Food kept in the house
c. Person who plots to hurt others
d. Woman whose husband has died
Part 2: Choose the best word to complete each sentence.

1. A couple hours after the game, the arena was completely __________.
   a. Design
   b. Empty
   c. Generous
   d. Widow

2. At the age of twenty-five, Muhammad was asked to marry a wealthy __________ called Khadija who was forty years old.
   a. Design
   b. Grave
   c. Leather
   d. Widow

3. Before his current job, he was the chairman of the board of __________ at the school.
   a. Governors
   b. Graves
   c. Leather
   d. Weeds

4. Determined to help her poor family, Domitila went to the grand mansion of the __________ of Hidalgo to work in the kitchen.
   a. Empty
   b. Governor
   c. Grave
   d. Leather

5. Domitila and Timoteo went to visit Domitila’s dead mother’s __________ every year.
   a. Grave
   b. Leather
   c. Weed
   d. Widow

6. Domitila’s mother told her, “Do every task with care, and always add a __________ dash of love.”
   a. Design
   b. Generous
   c. Grave
   d. Sudden

7. Domitila’s sandals were finely carved, and the __________ was a chorus of flowing strokes.
   a. Design
   b. Governor
   c. Weed
   d. Widow
8. He __________ the chair to adjust automatically.
   a. Designed
   b. Emptied
   c. Weeded
   d. Widowed

9. I hope I never again have to look into the __________ of any one dear to me.
   a. Generous
   b. Grave
   c. Leather
   d. Weed

10. I was surprised by her __________ decision to quit.
    a. Empty
    b. Grave
    c. Leather
    d. Sudden

11. It can be hard to __________ out the bad options when all the colleges send similar information.
    a. Grave
    b. Leather
    c. Sudden
    d. Weed

12. On his journey Timoteo came upon the __________ Malvina outside of her hut.
    a. Design
    b. Empty
    c. Grave
    d. Widow

13. The company claims to use only the finest __________ for its shoes and handbags.
    a. Governor
    b. Grave
    c. Leather
    d. Widow

14. The school raised the money for the new addition through donations from __________ alumni.
    a. Empty
    b. Generous
    c. Grave
    d. Sudden

15. The sky __________ darkened and rain fell.
    a. Design
    b. Suddenly
    c. Weed
    d. Widow
16. Timoteo asked everyone he saw if they had seen the girl who could turn desert __________ into food fit for kings.
   a. Governors
   b. Graves
   c. Weeds
   d. Widows

17. Timoteo ran his fingers across the __________ piece that had fallen from Domitila’s sandal.
   a. Generous
   b. Leather
   c. Weed
   d. Widow

18. Timoteo rubbed his __________ stomach.
   a. Empty
   b. Grave
   c. Leather
   d. Sudden
Escape from Nazi Berlin

concentration camp

a. A house or apartment used as a hiding place
b. A place where prisoners of war are held
c. Someone who hates Jews
d. The border between two countries

portray

a. To act like or pretend
b. To be positive during hard times instead of looking sad
c. To check or look over carefully
d. To split or break up

persecution

a. A Jewish holy place of worship
b. Someone who has been a friend for a long time
c. The act of attacking someone because of who or what they are
d. The process of travelling from one place to another

propaganda

a. A country person, like a farmer
b. German police force for the Nazis
c. Legal document that allows someone to travel into and within a country
d. Written or spoken material promoting an extreme idea or opinion

Specify

a. To attack and take over
b. To honor or respect something or someone
c. To make friends
d. To state something in great detail

1. Anti-Semitic __________ encouraged people to mistreat Jews.
   a. Concentration camp
d. Propaganda
e. Specify

2. Hans, Rachel, and Sophie had to __________ themselves as Dutch peasants to escape.
   a. Concentration camp
d. Propaganda
e. Specify
3. Jews faced many kinds of __________, including having their places of worship and holy books burned.
   a. Concentration camp
   b. Persecution
   c. Portray
   d. Propaganda
   e. Specify

4. Many sick children arrived at Ellis Island, but Americans had __________ that sick children would not be allowed to enter.
   a. Concentration camp
   b. Persecuted
   c. Portrayed
   d. Propaganda
   e. Specified

5. More than a million people died at the __________ at Auschwitz.
   a. Concentration camp
   b. Persecution
   c. Portray
   d. Propaganda
   e. Specify

6. People from a minority religion are often __________ by others.
   a. Concentration camp
   b. Persecuted
   c. Portrayed
   d. Propaganda
   e. Specified

7. She didn't believe the __________ of her day that women had to be soft and submissive.
   a. Concentration camp
   b. Persecution
   c. Portray
   d. Propaganda
   e. Specify

8. The instructions do not __________ what kind of screws to use.
   a. Concentration camp
   b. Persecution
   c. Portray
   d. Propaganda
   e. Specify

9. The lawyer __________ his client as a victim of child abuse.
   a. Concentration camp
   b. Persecuted
   c. Portrayed
   d. Propaganda
   e. Specified

10. The Nazis took thousands of Jews to __________.
    a. Concentration camps
    b. Persecution
    c. Portray
    d. Propaganda
    e. Specify
In the Line of Fire

coward
a. Bombs that are placed underground
b. Planes that drop bombs
c. Someone who can't shoot straight
d. Someone who is too afraid to do what is right or expected

Rake
a. A meeting held to share information
b. A very short cannon that fires shells or rockets
c. To move through or along something
d. To smile

surrender
a. To bet on something
b. To force to serve in the army
c. To give up
d. To stare

Wade
a. To joke about something
b. To make other people live under your laws
c. To move along the ground like a snake
d. To walk through water

Crouch
a. Bend down
b. To bury in sand
c. To shoot at others from a hiding place
d. To train

invade
a. To close your eyes
b. To knock someone over
c. To send soldiers into another country; to attack
d. To walk in a proud or confident way

shell
a. A funny remark or joke
b. An officer in the Army
c. The case around a bullet or a type of small bomb
d. The exact time that a secret attack is going to start

Bunker
a. A beach
b. A terrible nightmare
c. Someone who helps soldiers who are hurt during a battle
d. Strong forts or shelters

d. Surrender
e. Wade

1. A lot of the German guys were thrilled to __________. Some of them would throw down their guns and hug you.
   a. Crouch
   b. Invade
   c. Rake
2. Although he didn’t think he could pass the test, he refused to __________ to despair.
   a. Crouch  
   b. Invade  
   c. Rake  
   d. Surrender  
   e. Wade

3. As two soldiers started creeping toward the __________, the machine gun inside spit out another round of bullets.
   a. bunker  
   b. Coward  
   c. Rake  
   d. Shells

4. I couldn’t hear anything because of the blasts from the __________ blowing up.
   a. bunker  
   b. Coward  
   c. Rake  
   d. Shells

5. I didn’t want to be a hero, but I didn’t want to be a __________, either.
   a. bunker  
   b. Coward  
   c. Rake  
   d. Shells

6. I was ashamed of my low grade, so I hid my report card like a __________ instead of showing it to my parents.
   a. bunker  
   b. Coward  
   c. Rake  
   d. Shells

7. She __________ her fingers through her long blond hair.
   a. Crouched  
   b. Invaded  
   c. Raked  
   d. Surrendered  
   e. Waded

8. The ammunition is stored in concrete __________.
   a. bunkers  
   b. Cowards  
   c. Rakes  
   d. Shells

9. The first time I visited the ocean, I only __________ along the beach. Next time, I want to swim!
   a. Crouched  
   b. Invaded  
   c. Raked  
   d. Surrendered  
   e. Waded

10. The lion __________ in the tall grass, waiting to attack the gazelle.
    a. Crouched  
    b. Invaded  
    c. Raked  
    d. Surrendered  
    e. Waded
11. They fired ________ continuously at the oncoming army.
   a. bunkers  
   b. Cowards  
   c. Rakes  
   d. Shells  

12. Tim stopped when he heard the shots and ________ down in the bushes like an animal.
   a. Crouched  
   b. Invaded  
   c. Raked
   d. Surrendered  
   e. Waded

13. We had to ________ from the boat to the beach.
   a. Crouch  
   b. Invade  
   c. Rake
   d. Surrender  
   e. Wade

14. Weeds have ________ the garden, so I’ll need to pull them out.
   a. Crouched  
   b. Invaded  
   c. Raked
   d. Surrendered  
   e. Waded

15. When Allied soldiers landed in German-occupied France on D-Day, they were part of the largest ________ force in history.
   a. bunker  
   b. Coward  
   c. Invasion
   d. Shell  
   e. Surrender

16. When our boat arrived at the beach, bullets ________ the water around us.
   a. Crouched  
   b. Invaded  
   c. Raked
   d. Surrendered  
   e. Waded
Part 1: For each word, choose the word or phrase that means the same thing:

Capture

a. Find  
b. Hide  
c. Release  
d. Trap

Fail

a. kill  
b. leave home  
c. lose a limb  
d. try but not succeed

Dangerous

a. Happy  
b. Not safe  
c. Tired  
d. Trouble

Reptile

a. canoe  
b. cold-blooded animal  
c. person from Burundi  
d. victim

Expose

a. Attack  
b. Eat a lot  
c. Read  
d. Uncover

Risk

a. dive into the water  
b. starve  
c. take a chance  
d. wash clothes

Terror

a. Fear  
b. License to hunt  
c. Rumor  
d. Scarred

Part 2: Choose the best word to complete each sentence:

1. Because Patrice Faye likes unusual animals, he collects __________.
   a. Dangerous  
b. Capture  
c. Expose  
d. Fail  
e. Reptiles  
f. Risks  
g. Terrors
2. Because people depend on the water for food, bathing, and washing, they __________ being attacked by crocodiles by going in the water.
   a. Dangerous  
   b. Capture  
   c. Expose  
   d. Fail
   e. Reptile  
   f. Risk  
   g. Terror

3. I’d rather have a pet dog or cat than a __________.
   a. Dangerous  
   b. Capture  
   c. Expose  
   d. Fail
   e. Reptile  
   f. Risk  
   g. Terror

4. Instead of trying to kill the crocodile, the hunter made plans to __________ it alive.
   a. Dangerous  
   b. Capture  
   c. Expose  
   d. Fail
   e. Reptile  
   f. Risk  
   g. Terror

5. Once the crocodile was gone, people could swim and fish without __________ themselves to attack.
   a. Dangerous  
   b. Capturing  
   c. Exposing  
   d. Failing
   e. Reptile  
   f. Risking  
   g. Terror

6. People have been trying to kill the crocodile for years, but they have always __________.
   a. Dangerous  
   b. Captured  
   c. Exposed  
   d. Failed
   e. Reptile  
   f. Risked  
   g. Terror

7. People in Burundi live in __________ that they might be attacked by a giant crocodile.
   a. Dangerous  
   b. Capture  
   c. Expose  
   d. Fail
   e. Reptile  
   f. Risk  
   g. Terror

8. She got into a car accident while driving through a __________ intersection.
   a. Dangerous  
   b. Capture  
   c. Expose  
   d. Fail
   e. Reptile  
   f. Risk  
   g. Terror
9. The giant crocodile called Gustave is __________ because he’s huge and eats larger animals than other crocodiles do. He even eats people!
   a. Dangerous
   b. Capture
   c. Expose
   d. Fail
   e. Reptile
   f. Risk
   g. Terror

10. The mere sight of a snake or spider strikes __________ in the hearts of millions of people.
    a. Dangerous
    b. Capture
    c. Expose
    d. Fail
    e. Reptile
    f. Risk
    g. Terror

11. The shingles had fallen off, __________ the wood underneath.
    a. Dangerous
    b. Capturing
    c. Exposing
    d. Failing
    e. Reptile
    f. Risking
    g. Terror

12. There is no question that you might __________ if you try something new.
    a. Dangerous
    b. Capture
    c. Expose
    d. Fail
    e. Reptile
    f. Risk
    g. Terror

13. Wearing a seatbelt greatly reduces the __________ of injury or death in a car accident.
    a. Dangerous
    b. Capture
    c. Expose
    d. Fail
    e. Reptile
    f. Risk
    g. Terror

14. We’ll use cheese in traps to __________ the mice.
    a. Dangerous
    b. Capture
    c. Expose
    d. Fail
    e. Reptile
    f. Risk
    g. Terror
Killer Plants

Part 1: For each word, choose the word or phrase that means the same thing.

Energy

a. community of living things
b. disguise
c. power, strength, or ability
d. two or more things that combine to make something new

Passive

a. afraid
b. being the object of action rather than causing action
c. eating animals
d. growing quickly

Hair

a. a man-eating tree
b. a place where an animal or plant naturally lives and grows
c. a thin, threadlike growth
d. sweet liquid

Insect

a. a small animal with six legs and a three-part body
b. chemical substance used to destroy or stop plant growth
c. quality or characteristic of a person or animal
d. substance needed for life and growth

Poison

a. A contest of struggle
b. Coloring in the cells of plants and animals
c. Educated guess that is tested to see if it is true
d. Something that can cause people or animals to die or to become very sick if it gets into their bodies, especially by being swallowed

Instance

a. a made-up story
b. an example
c. chemical substance used to kill insects
d. truth

Soil

a. A man-made plant
b. Animal that lives by hunting other animals
c. Dirt
d. Something used for defense

Survive

a. continue living or existing
b. spread
c. to give the meaning of a word or idea
d. to produce fluid
Part 2: Choose the best word to complete each sentence.

1. Plants use the __________ in sunlight to make food.
   a. Energy
   b. Hairs
   c. Insects
   d. Instances

2. Apples, apricots, pears, peaches, and plums have seeds containing __________ called cyanide.
   a. Energy
   b. Instances
   c. Poison
   d. Soil

3. Carnivorous plants eat meat in order to __________ in a water-soaked home.
   a. Energy
   b. Insect
   c. Passive
   d. Survive

4. Many exotic plants become an important part of our lives. Oranges, watermelons, sugarcane, and wheat, __________, are non-native.
   a. Energy
   b. For instance
   c. Passive
   d. Survive

5. In some fairy tales, the princess __________ waits to be rescued, but in others, she rescues herself!
   a. Energy
   b. Hairs
   c. Passively
   d. Survives

6. Every year, about 15,000 acres of __________ are washed away by erosion in Haiti.
   a. Hairs
   b. Insects
   c. Passive
   d. Soil
7. She gets a lot done because she puts a lot of __________ into her work.
   a. Energy
   b. Hairs
   c. Insects
   d. Passive

8. The __________ on the stems and leaves of stinging nettles break off in the skin when an animal brushes against them.
   a. Hairs
   b. Insects
   c. Instances
   d. Soil

9. After visiting my friend’s house, I had cat __________ all over my coat from her new pet kitten.
   a. Hairs
   b. Insects
   c. Instances
   d. Poisons

10. The villain in the play dies by drinking __________.
    a. instance
    b. passive
    c. poison
    d. survive

11. Only a few written records __________ from ancient times.
    a. Energy
    b. Hairs
    c. Insects
    d. Survive

12. We have seen too many __________ in which poor families have had to leave their homes.
    a. Energy
    b. Instances
    c. Passive
    d. Soil

13. Some plants are both active and __________ trappers.
    a. Hairs
    b. Instance
    c. Passive
    d. Soil
14. Flesh-eating plants feast mostly on __________. Yet they will also eat slugs, spiders, tree frogs, and even rats.
   a. Insects
   b. Instances
   c. Passive
   d. Soil

15. During the summer, you need to use __________ repellent to keep the mosquitoes from biting you.
   a. Insect
   b. Instance
   c. Soil
   d. Survive

16. Plants normally get nitrogen, potassium, and phosphorus from the __________, but in wetlands, water washes nutrients away.
   a. Hairs
   b. Instance
   c. Soil
   d. Survive
# Lightning

**Part 1: For each word, choose the word or phrase that means the same thing:**

<table>
<thead>
<tr>
<th>Word</th>
<th>a.</th>
<th>b.</th>
<th>c.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>bolt</strong></td>
<td>A single line of lightning</td>
<td>Forest fire</td>
<td>High-speed camera</td>
<td>Storm cloud</td>
</tr>
<tr>
<td><strong>rumble</strong></td>
<td>A low, rolling sound</td>
<td>Destroy a building</td>
<td>to draw an outline</td>
<td>to weigh something</td>
</tr>
<tr>
<td><strong>flash</strong></td>
<td>A bright light</td>
<td>A laboratory</td>
<td>A mystery</td>
<td>A single hair</td>
</tr>
<tr>
<td><strong>streak</strong></td>
<td>A narrow line</td>
<td>A tall object</td>
<td>Scientist</td>
<td>The bottom of a cloud</td>
</tr>
<tr>
<td><strong>slivers</strong></td>
<td>Glowing air</td>
<td>Magical animals</td>
<td>Radio towers</td>
<td>tiny pieces</td>
</tr>
<tr>
<td><strong>strike</strong></td>
<td>To hit something</td>
<td>To travel</td>
<td>Too far away to hear</td>
<td>Very hot</td>
</tr>
<tr>
<td><strong>sensor</strong></td>
<td>A photograph</td>
<td>Atoms</td>
<td>Something that detects when something else is present</td>
<td>Strong wind</td>
</tr>
<tr>
<td><strong>spark</strong></td>
<td>A bit of fire</td>
<td>A computer</td>
<td>A magnet</td>
<td>A type of plane</td>
</tr>
<tr>
<td><strong>charge</strong></td>
<td>A meeting place</td>
<td>Cold air</td>
<td>Hail</td>
<td>Positive or negative electrical energy</td>
</tr>
<tr>
<td><strong>flicker</strong></td>
<td>A magnet</td>
<td>To move or shine irregularly</td>
<td>To shoot up from the ground</td>
<td>To watch something</td>
</tr>
</tbody>
</table>
ech0

<table>
<thead>
<tr>
<th>echo</th>
<th>channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>a type of cloud</td>
</tr>
<tr>
<td>b.</td>
<td>Sound that bounces and repeats</td>
</tr>
<tr>
<td>c.</td>
<td>to damage something</td>
</tr>
<tr>
<td>d.</td>
<td>to move sideways</td>
</tr>
<tr>
<td>a.</td>
<td>a ball of light</td>
</tr>
<tr>
<td>b.</td>
<td>a day on which thunder is heard</td>
</tr>
<tr>
<td>c.</td>
<td>a path through which something moves</td>
</tr>
<tr>
<td>d.</td>
<td>strong winds</td>
</tr>
</tbody>
</table>

**collide**

<table>
<thead>
<tr>
<th>collide</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>capture</td>
</tr>
<tr>
<td>b.</td>
<td>come together with force</td>
</tr>
<tr>
<td>c.</td>
<td>get dark</td>
</tr>
<tr>
<td>d.</td>
<td>take a picture</td>
</tr>
<tr>
<td>a.</td>
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<td>b.</td>
<td>come together with force</td>
</tr>
<tr>
<td>c.</td>
<td>get dark</td>
</tr>
<tr>
<td>d.</td>
<td>take a picture</td>
</tr>
</tbody>
</table>

**Part 2: Choose the best word to complete each sentence:**

1. A(n) _________ from the campfire burned a small hole in my shirt.
   - collide
   - Echo
   - Rumble
   - Sliver
   - Spark
   - Sensor

2. A(n) _________ of lightning shows the path the electrons followed as they moved through the air.
   - Charge
   - Echo
   - Rumble
   - Streak
   - Spark
   - Sensor

3. After walking across the carpet, I felt a shock from the built-up _________ of electricity.
   - Charge
   - Echo
   - Streak
   - Sensor
   - Sliver
   - Spark

4. As soon as the lightning _________ connects the cloud to the earth, electrons rush to the ground.
   - Channel
   - Collide
   - Echo
   - Sensor
   - sliver
   - Rumble

5. As the pieces of hail get heavier, they fall back through the cloud and crash into the smaller _________ of ice.
   - Charges
   - Echoes
   - Explodes
   - Sensors
   - Slivers
   - Slivers
6. His decision to leave college was like a ________ from the blue for his parents.
   a. Bolt
   b. Channel
   c. Charge
   d. Rumble
   e. Sensor
   f. Sliver

7. Please move the chair so I don’t trip over it and ________ the desk with my knee.
   a. channel
   b. collide
   c. Echo
   d. Rumble
   e. Sensor
   f. Strike

8. Cameras ________ as the celebrities passed.
   a. Charged
   b. Echoed
   c. slivered
   d. Flashed
   e. Rumbled
   f. Sensor

9. Light ________ are used in digital cameras, so that the image isn’t too bright or too dark.
   a. Charges
   b. Echoes
   c. bolts
   d. Rumbles
   e. sensors
   f. Slivers

10. Lightning ________ are important for research, protection, and forest-fire prevention.
    a. Charges
    b. Echoes
    c. bolts
    d. Rumbles
    e. sensors
    f. Slivers

11. Lightning is a very large electrical ________ caused by electrons moving suddenly.
    a. collide
    b. Echo
    c. Rumble
    d. Sensor
    e. Sliver
    f. Spark

12. My finger hurts because I got a(n) ________ of wood stuck in it.
    a. Charge
    b. Echo
    c. bolt
    d. Rumble
    e. sensor
    f. Sliver

13. Negative and positive ________ are attracted to each other.
    a. Charges
    b. Echoes
    c. sensors
    d. Flickers
    e. Rumbles
    f. Slivers

14. About 100 lightning ________ hit the earth every second.
    a. Bolts
    b. Channels
    c. charges
    d. Rumbles
    e. Sensors
    f. Slivers

15. He left ________ of dirt where he wiped the glass, so his mother made him clean it again.
    a. Charges
    b. Echoes
    c. Flickers
    d. Sensors
    e. Sparks
    f. Streaks
16. The __________ of lightning lit up the sky just for a moment.
   a. Charge        d. Flash
   b. Echo          e. Rumble
   c. collide       f. Sensor

17. The dark clouds __________ loudly as lightning lights up the night sky.
   a. Bolt          d. sensor
   b. Charge        e. Sliver
   c. Rumble        f. Strike

18. The overhead light kept __________ off and on.
   a. Charging      d. Sensor
   b. Echoing       e. Spark
   c. Flickering    f. Streak

19. The ship was sailing in the deepest part of the river __________.
   a. Channel       d. explode
   b. Collide       e. Rumble
   c. Echo          f. sliver

20. The train __________ as it passes noisily through town twice a day.
   a. Bolts         d. sensors
   b. Charges       e. Slivers
   c. Rumbles       f. Strikes

21. The two cars were about to __________ when one of them stopped suddenly.
   a. bolt          d. Echo
   b. channel       e. Rumble
   c. collide       f. Sensor

22. Thunder __________ when it bounces off mountains.
   a. Charges       d. Sensors
   b. Echoes        e. Sparks
   c. Flickers      f. Streaks

23. We shouted into the canyon and listened to the __________ of our voices.
   a. Channel       d. Echo
   b. charge        e. Sensor
   c. collide       f. Strike

24. When I saw lightning __________ a nearby lamp pole, I was blinded for a moment
    because of the brightness.
   a. channel       d. Rumble
   b. collide       e. Sensor
   c. Echo          f. Strike

25. When hail and slivers of ice __________ inside a cloud, some electrons get transferred
    from ice slivers to the hail.
   a. bolt          d. Echo
   b. channel       e. Rumble
   c. collide       f. Sensor
Natural Disasters

Part 1: For each word, choose the word or phrase that means the same thing:

Wreckage
a. A plan for what your family will do in an emergency
b. Damaged buildings
c. poisonous
d. Tourists

fault
a. graveyard
b. line along which earthquakes happen
c. reminder
d. storm

Aftershock
a. Jail cell
b. Large area of land
c. Small earthquake that happens after a bigger earthquake
d. Tool for detecting earthquakes

tsunami
a. Computer program
b. giant wave
c. helicopter
d. Ranger Station

collapse
a. fall down
b. stay safe
c. to rely on human experience
d. wait for directions

survivors
a. Experts
b. People who live through a disaster
c. snakes
d. Windows

suffocating
a. leaking
b. preventing people from breathing
c. touching the ground
d. yelling

seismograph
a. broken glass
b. something that measures and records earthquakes
c. the back of a truck
d. the exact center of a cyclone

eruption
a. bandages
b. dangerous tree
c. explosion
d. hand tool

complex
a. helpless
b. high-tech, with many parts
c. lucky
d. melting
gusts
a. burst of strong wind
b. cigarette butts
c. fire-fighting equipment
d. something unpredictable
crew
a. crushed car
b. Group of people who work together
c. spreading cloud of smoke
d. wild animals

evacuation
a. a smell like a campfire
b. good social skills
c. leaving a place
d. raising the ground surface
extinguished
a. completely stopped
b. dangerous
c. flooded
d. prepared

spared
a. accidental
b. dug deep
c. low to the ground
d. not injured or killed
torrent
a. gush, flood
b. near the surface
c. piece of wood
d. young cows

Part 2: Choose the best word to complete each sentence:

1. A Chinese scientist called Zhang Heng made the first __________ in 132 A.D. When an earthquake began, balls in dragons’ mouths would shake and then fall, allowing him to identify the direction the earthquake had come from.
   a. Crew
e. Seismograph
   b. Evacuation
f. Torrent
c. Fault
g. Tsunami
d. Gusts
h. Wreckage

2. A smaller fire can be __________ more quickly than a bigger fire.
   a. Aftershock
d. Torrent
   b. Extinguished
e. tsunami
   c. Fault
f. Wreckage

3. An 82-year-old man attempting to saw a branch off a tree died when a(n) __________ of wind whisked him off his ladder.
   a. Aftershock
e. Gust
   b. Crew
f. Seismograph
   c. Evacuation
g. Spare
   d. fault
h. Wreckage
4. After a volcanic _______, ash needs to be cleared away.
   a. Aftershock
   b. Complex
   c. Eruption
   d. Fault

5. After the San Francisco earthquake, most residents escaped their homes, but a few were trapped in the _________.
   a. Aftershock
   b. Complex
   c. Eruption
   d. Evacuation
   e. Fault
   f. Gusts
   g. Seismograph
   h. Wreckage

6. Coastal areas are most often impacted by _________.
   a. Complex
   b. crew
   c. Extinguished
   d. Spared
   e. Suffocating
   f. Tsunamis

7. Don’t put a pillow over the baby’s face—she could _________.
   a. crew
   b. Evacuate
   c. Gust
   d. Spare
   e. Suffocate
   f. Suffocate

8. Emergency workers tried to rescue people quickly after the earthquake, because they were aware that _________ might knock down damaged structures.
   a. Aftershocks
   b. Crews
   c. Evacuation
   d. seismographs
   e. Suffocating
   f. Survivors

9. He _________ his cigarette in the ashtray.
   a. Complex
   b. Evacuated
   c. Extinguished
   d. fault
   e. Spared
   f. Torrent

10. If a building is already damaged, an earthquake is likely to make it _________.
    a. Collapse
    b. complex
    c. Crew
    d. Guts
    e. Spared
    f. Suffocating
    g. Torrent

11. Marieve works on a(n) _________ of four people who are the first ones sent to a fire.
    a. Aftershock
    b. Crew
    c. Eruption
    d. evacuation
    e. Gust
    f. Seismograph
    g. Torrent
    h. Tsunami
12. New 3D maps allows researchers to view the entire _________ of the Titanic at the bottom of the ocean.
   a. Aftershock
e. Suffocating
b. Complex  f. Torrent
c. Crew  g. Tsunami
d. Spared  h. Wreckage

13. No one knows why the gunman shot some people and _________ others.
   a. Aftershock  d. Gust
   b. Complex  e. Spared
   c. Crew  f. Wreckage

14. Not every crack in the ground is a _________; earthquakes only occur where energy is released suddenly when the rocks move.
   a. Collapse  e. Gust
   b. Crew  f. seismograph
c. Evacuation  g. Survivor
d. Fault  h. Tsunami

15. Radio and television updates inform people living in hurricane areas about _________ orders.
   a. Aftershock  d. Extinguished
   b. Collapse  e. Seismograph
   c. Evacuation  f. Spared

16. Rescue dogs searched for _________ after the San Francisco earthquake.
   a. aftershocks  e. Survivors
   b. Evacuation  f. Torrents
   c. Fault  g. Tsunamis
d. Seismographs

17. Some _________ are placed in university or museum basements for educational purposes, but the ideal location for earthquake research would be more remote, because the earth’s vibrations can be recorded more accurately where traffic and other vibrations are minimal.
   a. Extinguished  d. Spared
   b. Gusts  e. torrents
   c. Seismographs  f. Tsunamis

18. The cancer _________ sent cards to encourage other women who were in the hospital with life-threatening diseases.
   a. Eruption  f. Survivor
   b. Evacuation  g. Torrent
   c. Fault  h. Tsunami
   d. Gusts
   e. Seismograph
19. The ___________ that was repairing the road worked quickly.
   a. Aftershock  e. Seismograph
   b. Crew  f. Torrent
   c. eruption  g. Tsunami
   d. Fault  h. Wreckage

20. The rate of ___________ decreases quickly with time, following the main earthquake.
   a. Aftershocks  d. Extinguished
   b. complex  e. Fault
   c. Crews  f. Seismograph

21. The San Andreas ___________, which runs through California, is almost 700 miles long. Many small earthquakes occur there several times a month.
   a. Eruption  e. seismograph
   b. Evacuation  f. Torrent
   c. Fault  g. Tsunami
   d. Gusts

22. The storm turned the stream into a raging ___________ that knocked down trees and washed away houses.
   a. Aftershock  e. Seismograph
   b. crew  f. Survivor
c. Evacuation  g. Torrent
   d. Fault

23. The volcano produced a(n) ___________ cloud of hot steam, dust, and gas that killed most people instantly.
   a. Aftershock  e. Seismograph
   b. Crew  f. Suffocating
c. Evacuation  g. tsunami
d. Fault

24. This math problem is ___________ because it requires many steps to solve.
   a. Complex  d. Extinguished
   b. Tsunami  e. Suffocating
c. Eruption  f. wreckage

25. Today, scientists use ___________, high-tech instruments to measure the earth’s vibration patterns with precision.
   a. Collapse  d. Extinguished
   b. Complex  e. Fault
c. evacuation  f. Suffocating

26. Volcanoes do not always ___________ vertically; sometimes the lava flows out sideways.
   a. Erupt  d. survivor
   b. Evacuate  e. Torrent
c. Spare
27. We weren’t injured during the tornado, but many others were. We felt lucky to be
_________.
   a. Collapse    e.  Spared
   b. Complex     f.  suffocating
   c. Extinguished g.  Torrent
   d. Seismograph h.  Tsunami

28. When an underwater earthquake happened in Chile in 1960, it caused a __________
that killed people in Hawaii and Japan.
   a. Complex       d.  spared
   b. Crew          e.  Suffocating
   c. Seismograph   f.  Tsunami

29. When the chair I was sitting in __________, I fell on the floor.
   a. Collapsed       e.  Spared
   b. complex        f.  Suffocated
   c. Extinguished   g.  Torrent
   d. Gusts

30. When the dikes broke, a(n) __________ of water poured onto the plain.
   a. Aftershock       e.  Seismograph
   b. crew            f.  Survivor
   c. Evacuation      g.  Torrent
   d. Fault

31. When you hear the fire alarm, you need to __________ the school building.
   a. Complex       d.  Suffocate
   b. Evacuate     e.  Torrent
   c. Spare        f.  Wreckage

32. Wind __________ during a hurricane are very dangerous; they can reach speeds of 200
miles per hour!
   a. Aftershocks   e.  Gusts
   b. Crews        f.  Seismographs
   c. Evacuations  g.  Survivors
   d. faults       h.  Wreckage
Part 1: For each word, choose the word or phrase that means the same thing.

**Ahead**
- a. Connected to the neck
- b. Fast
- c. In or toward the front, future, or a better position
- d. In the streets

**Chest**
- a. A big breath
- b. A heavy weight that holds something down
- c. The back part of a boat
- d. The front part of the body between the neck and the stomach

**Hook**
- a. A small piece of wood
- b. A very stupid action
- c. Curved or bent tool for catching, holding, or pulling something
- d. Dried fish

**Ignorance**
- a. A weapon
- b. Friendship
- c. Lack of knowledge
- d. The state of being enemies

**Invisible**
- a. Carefully wrapped
- b. Changing often
- c. Not able to be seen
- d. Towards the north

**Map**
- a. Bag used for shopping
- b. Picture or chart that shows the different parts of something
- c. Small island
- d. The shore of an ocean

**Relax**
- a. Become less tense
- b. Close the eyes
- c. Fall over
- d. To wake up during the night

**Remember**
- a. Listen and repeat
- b. To go outside
- c. To shine a light on something
- d. To think about something or someone from the past

**Rope**
- a. Clump of branches
- b. Hat
- c. Strong, thick string
- d. The bottom of a ship’s mast

**Weak**
- a. Having little physical power or ability
- b. Hurting
- c. Lazy
- d. Very tired
Part 2: Choose the best word to complete each sentence.

1. His racist attitudes were born out of an appalling __________ about other cultures.
   a. Hook
   b. Ignorance
   c. Remembrance
   d. Weakness
2. I __________ my first day of school like it was yesterday.
   a. Ignore
   b. Map
   c. Relax
   d. Remember
3. I could not __________ my own name because I was so excited!
   a. Ignore
   b. Map
   c. Relax
   d. Remember
4. I’ll draw you a __________ so you know how to get to the station.
   a. Chest
   b. Map
   c. Rope
   d. Weak
5. My __________ is a weapon my enemies can use against me.
   a. Hook
   b. Ignorance
   c. Remembrance
   d. Ahead
6. My ribs push out from my __________ like sticks under my skin.
   a. Chest
   b. Hook
   c. Ignorance
   d. Map
7. Sailing alone in the darkness, I __________ and let the ocean carry us into the night.
   a. Hook
   b. Ignore
   c. Relax
   d. Remember
8. That baseball player has a(n) ________ throwing arm.
   a. Chest
   b. Hook
   c. Invisible
   d. Weak

9. The ________ and the compass will be very important to make sure we don’t get lost.
   a. Chest
   b. Hook
   c. Ignorance
   d. Map

10. The antique brass coat ________ features St. George slaying the dragon.
    a. Hook
    b. Ignorance
    c. Map
    d. Rope

11. The breeze is ________ but keeps the sail filled.
    a. Ignorant
    b. Remembered
    c. Roped
    d. Weak

12. The doctor felt my pulse; then stopped and put his ear to my ____________, and listened long.
    a. Chest
    b. Hook
    c. Ignorance
    d. Map

13. The horse leaps ________ into a gallop.
    a. Ahead
    b. Relax
    c. Remember
    d. Weakly

14. The horse lets me take the ________ and tie a loop around his nose like a halter.
    a. Hook
    b. Ignorance
    c. Map
    d. Rope

15. The muscles in my neck and shoulders should ________ after a nice hot shower.
    a. Hook
    b. Relax
    c. Remember
    d. Weaken
16. The river’s current is like a(n) _________ hand pushing us to the north.
   a. Chest
   b. Hook
   c. Invisible
   d. Map

17. The student liked to work _________ of the rest of the class.
   a. Ahead
   b. Hook
   c. Relax
   d. Remember

18. We don’t wait long before a fish bites the _________.
   a. Hook
   b. Ignorance
   c. Map
   d. Relaxation

19. We used _________ to tie down the furniture in the trailer.
   a. Ahead
   b. Invisibility
   c. Maps
   d. Rope

20. With the telescope we can see details of the planet's surface that are ordinarily _________.
   a. Chests
   b. Hooked
   c. Invisible
   d. Relaxed
Stranger in His Own Land

Combat

a. A long, loose robe
b. A sharp blade attached to the end of a rifle
c. Active fighting in a war
d. Pieces of metal scattered by a bomb explosion

Duty

a. A person who earns most of the money in a household
b. Confusion or chaos
c. Second-generation immigrant
d. Something you must do because it’s right or because the law requires it

fleets

a. A good job
b. A group of ships or vehicles
c. A set of rules
d. Luggage you carry with you when you travel

relocate

a. To get ready for war
b. To help people eat healthily
c. To move to a new place
d. To try to understand something by looking closely at it

surrender

a. To discover a secret
b. To give up or stop fighting
c. To take control of another country by force
d. To try to hurt or offend someone

loyalty

a. A high-ranking, wealthy class of people
b. Complete and constant support for someone or something
c. Something that’s extra, not needed
d. The giving of money or other support to a person or activity

traitor

a. A person who betrays a country or group of people by helping or supporting an enemy
b. A trench or hold dug to protect soldiers from enemy fire
c. Information or misinformation designed to change the opinion of others
d. Military housing

invade

a. To add strength to something
b. To hunt or follow something silently
c. To lose wages or property
d. To send soldiers into another country; to attack
1. Although he didn’t think he could pass the test, he refused to _________ to despair.
   a. combat  
   b. Invade  
   c. Relocate  
   d. Surrender

2. City council is hoping to get new ideas for how to convince more businesses to _________ to this city.
   a. combat  
   b. Invade  
   c. Relocate  
   d. Surrender

3. Joe got a chance to prove his _________ by risking his life on the battlefields of Europe.
   a. Combat  
   b. Duty  
   c. Fleet  
   d. invasion  
   e. Loyalty

4. Joe’s family was forced to move to a _________ camp in Arizona.
   a. Combat  
   b. Duty  
   c. Fleet  
   d. invasion  
   e. Relocation

5. Joe’s team lost half of its soldiers in _________ while rescuing another battalion.
   a. Combat  
   b. Duty  
   c. Fleet  
   d. Relocation

6. Kamikaze pilots would rather die than see Japan lose the war, because of their strong sense of _________.
   a. Combat  
   b. Duty  
   c. Fleet  
   d. invasion  
   e. Relocation
7. Many of the school buses in our _________ are in need of repair.
   a. Combat
   b. Duty
   c. Fleet
   d. invasion
   e. Relocation

8. Many people who joined the military during the past few years have never seen _________, in spite of the fact that we’re still engaged in war in Afghanistan.
   a. Combat
   b. Fleet
   c. Relocation
   d. traitor

9. The _________ sold his government’s secret documents to a spy.
   a. Combat
   b. Fleet
   c. Relocation
   d. traitor

10. The naval base at Pearl Harbor held one of the most powerful _________ in the world.
    a. Fleets
    b. loyalty
    c. Relocations
    d. traitor

11. The office assistant’s primary _________ at the event is to take attendance.
    a. Combat
    b. Duty
    c. invasion
    d. Relocation
    e. Fleet

12. The samurai refused to _________ because they believed it was better to die with honor.
    a. combat
    b. loyalty
    c. Relocate
    d. Surrender

13. The UND hockey team has many _________ fans.
    a. Duty
    b. Fleet
    c. invaded
    d. Loyal
14. Weeds have _________ the garden, so I’ll need to pull them out.
   a. Duty                      c. Invaded
   b. fleet                    d. Surrendered

15. When Iva returned to the United States, she was called a _________ because she had
    worked on a Japanese propaganda radio show.
   a. Fleet                     c. Relocation
   b. loyalty                  d. traitor

16. Within one year, German troops _________ Poland, Norway, Denmark, the Netherlands,
    Belgium, and France.
   a. Duty                      c. Invaded
   b. Fleet                    d. Traitor
Part 1: For each word, choose the word or phrase that means the same thing.

Clone
a. a drug that protects against disease
b. plant or animal that’s the same genetically as another plant or animal
c. the part of a cell that contains genes
d. to present a question or problem

Copy
a. Any living thing, like a plant or animal
b. Something that’s like something else
c. To look closely at the facts in order to understand them
d. To tell the difference between one thing and another

Engineer
a. a chemical found in all living things
b. to experiment
c. to plan, build, or manage something using scientific methods
d. to worry about long-term effects

Exact
a. Completely correct or accurate
b. Cute
c. Overweight
d. Strong

Lot
a. a fault or weakness
b. a joke
c. a large quantity
d. poison

Modify
a. Change
b. Imagine
c. Pass pollen between flowers to produce seeds
d. Protect against disease

Pair
a. A step toward achieving a goal
b. Poison designed to kill insects
c. To change in an unskilled way
d. Two things that go together

Parent
a. a grown animal
b. chemical code
c. expert
d. something that produces something else

Process
a. a natural balance
b. a series of actions that produce something or lead to a particular result
c. a small unit of life
d. a special quality
Unique

a. famous
b. fresh
c. not like anything else
d. so small it can only be seen with a microscope

Part 2: Choose the best word to complete each sentence.
1. African violets and other plants can be easily _________ by replanting a broken-off leaf.
   a. Cloned
   b. Engineered
   c. Process
   d. Unique

2. The bridge has been _________ to be able to support up to two tons.
   a. Engineered
   b. Lot
   c. Paired
   d. Parented

3. A human genome contains 23 _________ of chromosomes.
   a. Engineers
   b. Exact
   c. Pairs
   d. Parents

4. Certain genes in animals cause humans to reject animal organ transplants, but pigs could possibly be _________ without those genes.
   a. Engineered
   b. Lots
   c. Paired
   d. Parents

5. Dolly the lamb was the world’s first _________ mammal.
   a. Cloned
   b. Exact
   c. Parent
   d. Unique

6. Each of your _________ gave you one-half of your genes.
   a. Clones
   b. Copies
   c. Parents
   d. Process
7. Gene technology could lead to exciting medical breakthroughs that do a(n) __________ of good.
   a. Clone
   b. Exact
   c. Lot
   d. Parent

8. Genetically __________ bananas could be used for vaccines or supercharged with vitamins.
   a. Cloned
   b. Copied
   c. Modified
   d. Unique

9. Humans have been tinkering with genes for hundreds of years. The __________ is called selective breeding.
   a. Clone
   b. Engineer
   c. Lot
   d. Process

10. Identical twins have the __________ same gene pattern.
    a. Exact
    b. Lot
    c. Modify
    d. Pair

11. If you’re often late to school, you’ll need to __________ your behavior to succeed in a job.
    a. Clone
    b. Copy
    c. Modify
    d. Unique

12. Latin is the __________ language of several languages, including Italian, Spanish, and French.
    a. Clone
    b. Copied
    c. Lot
    d. Parent

13. The paintings at the museum are originals, not __________.
    a. Clones
    b. Copies
    c. Engineers
    d. Unique
14. She’s in the ________ position of running for office against her husband.
   a. Engineer
   b. Modify
   c. Parent
   d. Unique

15. Stem cells are ________ because they have not specialized yet and can grow into any type of cell.
   a. Exact
   b. Lots
   c. Parents
   d. Unique

16. The teacher let the students work in ________ on the assignment.
   a. Clones
   b. Copies
   c. Pairs
   d. Parents

17. They must have paid a(n) ________ for that fancy car.
   a. Clone
   b. Engineer
   c. Exact
   d. Lot

18. We don’t yet know the ________ dates for summer school.
   a. Engineer
   b. Exact
   c. Lot
   d. Process

19. When a fertilized egg splits into two embryos, each embryo carries a(n) ________ of the same genetic “building plan.”
   a. Copy
   b. Engineer
   c. Modification
   d. Parent

20. The whole ________ of remodeling our house is expected to take a few months.
   a. Clone
   b. Engineer
   c. Lot
   d. Process
Part 1: For each word, choose the word or phrase that means the same thing.

**Accident**
- a. Obvious lie
- b. Unexpected meeting
- c. Unknown relative
- d. Unplanned event that causes damage or injury

**Avenue**
- a. City school
- b. Crowded corner
- c. The gutter beside a sidewalk
- d. Wide street, way of access

**Band**
- a. Celebration
- b. Club where musicians play
- c. Empty room
- d. Small group of musicians who play music together

**Barely**
- a. Almost not possible, very little
- b. Shockingly
- c. Sinking
- d. Speedily

**Breath**
- a. A waste
- b. Air taken into the body
- c. Someone who’s new
- d. Wind

**Exactly**
- a. Centrally located
- b. helpfully
- c. In a correct or precise way
- d. Terrifying

**Patient**
- a. A doctor
- b. A kid
- c. Someone receiving medical care
- d. Someone’s who doesn’t speak English

**Razor**
- a. Contrasting image
- b. Dryer that blows hot air
- c. Fake smile
- d. Tool with a sharp edge used to shave or cut hair

**Security**
- a. Being protected or safe from harm
- b. Laundry bin
- c. Marching single file
- d. Storage closet

**Shut**
- a. Close
- b. Enter loudly
- c. Stop going somewhere
- d. Watch carefully
Part 2: Choose the best word to complete each sentence.

1. “A few weeks of practice, and you’ll be the star of my stage __________,” the teacher told Arjay.
   a. Band  
b. Breath  
c. Patient  
d. Razor

2. According to their timetable, at __________ 9:20 she’s going to bring Healy to the kitchen exit.
   a. Accidentally  
b. Breath  
c. Exactly  
d. Securely

3. Bats have few teeth because of their liquid diet, but those they have are __________ sharp.
   a. Band  
b. Breath  
c. Patient  
d. Razor

4. Gecko wheels down __________ and side streets, running stoplights, and using the sidewalk as a passing lane.
   a. Avenues  
b. Bands  
c. Breaths  
d. Patients

5. He can’t afford drinks; he’s __________ able to part with subway fare to get here.
   a. Avenue  
b. Banded  
c. Barely  
d. Shut

6. Healy is still __________, but his chest rises and falls almost imperceptibly.
   a. Breathing  
b. Razor  
c. Shut  
d. Banding
7. In the months since Gecko awoke after his __________, two good things have happened to him – Douglas Healy and Roxanne Fitzner.
   a. Accident
   b. Avenue
   c. Band
   d. Breath

8. One kid has a dollar sign __________-cut into his very short hair.
   a. Avenue
   b. Breath
   c. Razor
   d. Shut

9. Several __________ were in the lobby of the clinic waiting to see the doctor.
   a. Avenues
   b. Bands
   c. Breaths
   d. Patients

10. She says that her pregnancy was a(n) __________.
    a. Accident
    b. Avenue
    c. Band
    d. Breath

11. Some people think the student was attacked because her college failed to provide adequate __________ on campus after dark.
    a. Accidents
    b. Bands
    c. Breath
    d. Security

12. The Hungarian __________ wore red uniforms and sat on the raised platform at the end of the room, waiting for the conductor.
    a. Accident
    b. Avenue
    c. Band
    d. Breath

13. The levers need to be positioned __________ in the right place, or the machine won’t work.
    a. Accidentally
    b. Barely
    c. Breathily
    d. Exactly
14. There are several lockdown wards in Bronx County Psychiatric, where the __________, like prisoners, never leave their rooms, not even for meal time.
   a. Avenues
   b. Breaths
   c. Patients
   d. Razors

15. They pause at the __________ gate and wait for the attendant to buzz them through.
   a. Breath
   b. Security
   c. Barely
   d. Exact

16. This gum will freshen your __________.
   a. Accident
   b. Avenue
   c. Breath
   d. Security

17. We __________ spoke the entire time we were in the car.
   a. Accidentally
   b. Barely
   c. Exactly
   d. Razor

18. We plan to pursue all available __________ to get our message to the public.
   a. Accidents
   b. Avenues
   c. Breaths
   d. Security

19. With the halfway house still on probation, any violation could __________ it down.
   a. Avenue
   b. Breath
   c. Razor
   d. Shut

20. Yesterday we had to __________ all the windows, even though it was sunny, because of the cold wind.
   a. Avenue
   b. Breath
   c. Razor
   d. Shut
## What Comes from Plants

**Part 1:** For each word, choose the word or phrase that means the same thing.

<table>
<thead>
<tr>
<th>Also</th>
<th>Live</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Coming from</td>
<td>a. exist</td>
</tr>
<tr>
<td>b. In addition</td>
<td>b. make</td>
</tr>
<tr>
<td>c. Unable to do without</td>
<td>c. to make oxygen</td>
</tr>
<tr>
<td>d. Using</td>
<td>d. to use</td>
</tr>
<tr>
<td><strong>Bush</strong></td>
<td></td>
</tr>
<tr>
<td>a. Animals that eat plants</td>
<td>a. a large number</td>
</tr>
<tr>
<td>b. Fuel</td>
<td>b. complete</td>
</tr>
<tr>
<td>c. The roots and stems</td>
<td>c. indoor</td>
</tr>
<tr>
<td>d. Thick plant or shrub</td>
<td>d. simple</td>
</tr>
<tr>
<td><strong>Fiber</strong></td>
<td></td>
</tr>
<tr>
<td>a. medicine made from plants</td>
<td></td>
</tr>
<tr>
<td>b. plant that makes oxygen</td>
<td></td>
</tr>
<tr>
<td>c. something used to lubricate machinery</td>
<td></td>
</tr>
<tr>
<td>d. thread-like material</td>
<td></td>
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<tr>
<td><strong>Other</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Shelter</strong></td>
<td></td>
</tr>
<tr>
<td>a. A hobby</td>
<td></td>
</tr>
<tr>
<td>e. Reason</td>
<td></td>
</tr>
<tr>
<td>f. Sap from trees</td>
<td>b. Something that covers or protects</td>
</tr>
</tbody>
</table>
Part 2: Choose the best word to complete each sentence.

1. A journey of ___________ miles begins with a single step.
   a. Also  
   b. Live  
   c. Many  
   d. Other

2. Fabrics are colored using dyes from ___________ different plants.
   a. Also  
   b. Fiber  
   c. Many  
   d. Shelter

3. Humans use plants to make ___________. Houses are made of wood. Some houses are made of grass and leaves.
   a. Also  
   b. Live  
   c. Many  
   d. Shelters

4. I hope to ___________ long enough to see my grandchildren grow up.
   a. Bush  
   b. Fiber  
   c. Live  
   d. Shelter

5. June or July is the best time to prune raspberry ___________.
   a. Bushes  
   b. Live  
   c. Many  
   d. Other

6. Most paper is made from trees. ___________ kinds of paper are made from rice and bamboo.
   a. Fiber  
   b. Live  
   c. Other  
   d. Shelter

7. Nylon is a very strong man-made ___________.
   a. Also  
   b. Fiber  
   c. Many  
   d. Other
8. Oil from plants is used in shampoo and skin creams. It is ________ used to lubricate machinery.
   a. Also
   b. Live
   c. Many
   d. Other

9. Rope is made of _________ from plants such as hemp and jute.
   a. Also
   b. Fibers
   c. Other
   d. Shelters

10. The main road is closed, so you’ll need to find some _________ way to get there.
    a. Fiber
    b. Live
    c. Many
    d. Other

11. The organization provides food and _________ for homeless people.
    a. Also
    b. Bush
    c. Live
    d. Shelter

12. Thomas Edison is best known for inventing the lightbulb, but he _________ invented the phonograph.
    a. Also
    b. Live
    c. Many
    d. Other

13. We can’t _________ without plants because they give us food and make oxygen.
    a. Bush
    b. Fiber
    c. Live
    d. Shelter

14. We plant flowers, ___________, and trees around our houses for decoration.
    a. Bushes
    b. Live
    c. Many
    d. Shelter
REFERENCES


http://www.learnalberta.ca/content/eslapb/assessmenttools.html.


