Easing Constraints on L2 Readers:
A Blueprint for Teaching Native Texts to High-Intermediate Non-Native Speakers

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Abstract

Reading can be frustrating and alienating for second language (L2) learners, but it is crucial to surviving in an L2 environment – especially an academic environment. According to Grabe and Stoller (2002, p. 76), a reader must know 95% of the words he or she encounters to read comfortably and fluently. However, many second language learners are unable to reach this threshold when reading university-level native texts. Traditional approaches to teaching reading to language learners such as those outlined in Brown (1994, p. 309) encourage the use of "compensation strategies" to make up for this deficit.

In this paper, I will outline a theory of reading that explains reading as a hierarchy of efficient and inefficient processes. Efficient processes include automatic word recognition and automatic phrase recognition while "compensation strategies" fall under inefficient processes and can therefore overwhelm working memory and cause the reader to lose sense of the text as a whole. Based on this theory of reading, instead of encouraging compensation strategies, as suggested by Brown (1994), reading instruction should attempt to intervene in order to make these strategies unnecessary and allow the reader to continue to use his or her efficient processes. After outlining my theory, I explore techniques that intervene at various stages to keep the L2 reader reading comfortably. I look at pre-reading techniques such as schemata building activities that provide a structure of words, images and ideas on which the reader can build comprehension. I also explore techniques for adapting native texts such as simplification, elaboration and glossing as a means of intervening during reading to prevent the reader from resorting to inefficient processes. I conclude with a lesson plan that incorporates these techniques, provides a blueprint for teaching native texts to non-native learners, and makes reading enjoyable for language learners as an example of how to implement this theory into classroom practice.

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Introduction

To survive in higher education, one must be a proficient reader. Proficient readers read a lot, and they read a lot because they enjoy reading. Reading fiction in English, whether novels or short stories, is a pleasurable pastime for millions of American college students. For non-native speakers however, reading can be frustrating. The sheer number of words and unfamiliar background knowledge required to understand a story can make non-native speakers feel lost and alienated. American Universities are admitting record numbers of international students including 235,000 students from China alone in 2013 (International Student Enrollment Trends, 2013). Many of these students require English courses. As a University ESL (English as a second language) teacher, I want to remove obstacles between ESL students and the enjoyment of reading, and provide students with positive experiences reading fiction so that they will be encouraged to read more. To accomplish this goal, I first consider the processes the brain engages in while reading and identify where second language learners in particular will have trouble, then discuss techniques to circumvent, attenuate, and, if possible, neutralize these disadvantages whether by modifying readings to guide students as they read or through the use of pre-reading activities that provide background knowledge and vocabulary. Following the discussion of these teaching techniques, I present a lesson unit to illustrate this approach and to serve as a blueprint for taking a native text and making it more accessible and, therefore, more enjoyable for second language learners.

1. Theory of Reading: a Process Composed of a Hierarchy of Subprocesses

Just because you know how to drive a car, does not mean you know how its engine works (Minsky, 1986). Likewise, just because you know how to read doesn't mean you know what is going on inside your brain when you are reading. When we talk about how to help L2 readers,

we think we know what we mean when we say *reading*. But do we really? If we look closer at any whole process, we will see that it is made up of many smaller subprocesses. What follows is an attempt to describe the subprocesses of reading in an L1 reader's mind based on a synthesis of reading research. I will discuss the processes by which the reader takes in information, how the information is stored, how the information is further processed by the reader's prior knowledge and ultimately how the processed information is assembled into a coherent whole. Afterward, I will detail just how these processes can fail the L2 reader and the rest of the paper will be devoted to providing support in crucial areas in order to avoid these failures. But for now, let's begin by describing the information absorbing processes in the L1 reader.

1.1. Efficient and Inefficient Reading Processes[1]

The most efficient and reliable of the subprocesses of reading are the automatic recognition programs. The reader first runs an automatic word recognition program processing whole words on the page (or screen) (Grabe and Stoller, 2002). Of course, humans do not always understand words in isolation but rather as parts of larger linguistic chunks (Lewis, 1996, Van Patten, 2003). Another piece of mental "software" runs concurrently to process these chunks as they reach the reader's brain. If the phrase or sentence as a whole is not a recognizable chunk, the brain will break down the sentence or phrase into smaller chunks and run these through its chunk recognition program. This time, if some words are not a part of any known chunks, or if the meaning of the whole sentence is not apparent from the sum of the chunks, the brain will process the sentence according to its understanding of grammar.

[1] This paper eschews the popular nomenclature of "bottom-up" and "top-down" processes in favor of "efficient" and "inefficient" which I believe are more descriptive for my purposes. Whether a process is "efficient or inefficient is determined by the amount of mental resources spent decoding each word.

As streams of information enter the reader's brain, the brain runs two more concurrent programs. One stores incoming information in working memory and keeps it available for fast processing. As still more information enters the brain, this program stitches it to the stored information allowing the reader to see the text as a cohesive whole rather than disconnected words and phrases. The other concurrent program, according to Rumelhart and Ortony (1976) acts as web -- the threads of which represent words or ideas. When an idea similar to that of an existent thread gets processed, it "trips" the thread and other connected threads thus activating what researchers call *schemata*, or webs of knowledge about a particular subject (Rumelhart and Ortony, 1976). When a particular schema becomes activated, the associated vocabulary become available in the reader's brain as the pool of words he or she is likely to encounter in the text. For instance, when the brain processes the word "elephant," it may activate schema for wildlife of the African savannah, endangered species, conservation, large herbivores, and large mammals. Vocabulary related to these topics will become available to aid the reader in making predictions (Carrell and Eisterhold, 1983). If the reader encounters words like *tusk*, *ivory*, *zebra*, *hyena*, and *trunk* he or she will recognize them immediately. The meanings of those words along with the connotations and associated images will be readily available unless the reader has limited English proficiency and has yet to learn these words. Schemata serves other functions in addition to helping the reader process incoming information, but I will discuss those later. At this point, let's discuss what happens when the automatic word and phrase recognition programs crash.

Even in the brain of an L1 reader, particularly a young reader, the automatic recognition subprocesses can fail. Occasionally the reader will encounter a word he or she cannot process. If that happens, the brain has several "programs" it can run to attempt to resolve the matter. If the

brain cannot process the word as a whole, it might attempt to decode the word by breaking it apart into its constituent morphemes and reassembling the meaning from them (Smith, 1985). For example, a native speaker may encounter the word *antipathy* and be momentarily confused, but, by noticing that the root of the word is the same as the root of *sympathy* and that the prefix *anti* means opposed to, against or some variation thereof, the reader can guess that *antipathy* means the opposite of *sympathy*. The reader can move on without consulting a dictionary. This process is more effective in the mind of an advanced reader who already has a large vocabulary. If the reader is still unsuccessful in decoding the word, the brain can determine a set of likely meanings from the surrounding linguistic environment and from the activated schema (Grabe and Stoller, 2002). The brain can even combine these two programs. However, running these programs may not be prudent as they expend tremendous amounts of time and mental resources on just a tiny percentage of a page. According to Schmidt (2001), a reader's attentional resources are limited and must be used strategically. Furthermore, focusing attention in one area could suppress attention to other things (2001). Therefore, if a reader focuses too long on one word, he or she might lose the impression of the text as a whole. Moreover, even after devoting time and energy, the brain's algorithms may not result in the correct meaning for the word. If one were to guess the meaning of the word *brawling* from the sentence, "People were drinking, singing, laughing and brawling," it would be very reasonable to conclude that "*brawling"* means having a good time (Laufer, 2003). In such a scenario, a better option might be not to guess and, instead, accept that the ambiguity of the word remains unresolved and instead process the entire sentence for meaning without processing the word. Oftentimes, if the brain is able to process the meaning of a sentence, it will not return to ambiguous words (VanPatten, 2002). If the offending word

renders the entire sentence ambiguous, the reader can go as far as to ignore the entire sentence and resume processing when the reader once again finds him/herself on familiar footing.

To recap, reading in L1 is a process consisting of many subprocesses that one can imagine as a hierarchy with the most efficient processes at the top and the least efficient processes at the bottom. On the most efficient end of the spectrum are the automatic phrase and word recognition processes. The grammar parsing process forms the middle of the spectrum. Below are the inefficient, resource-demanding processes of breaking down words into their constituent morphemes and guessing words from context and activated schema. If the higher processes crash, as they are prone to do occasionally, the lower processes take over. The brain's schemata web is not part of this hierarchical spectrum, but rather a program that runs concurrently no matter what processing program is currently active.

1.2. System Crash, Memory Spill

If, for whatever reason, the higher-level processes crash frequently enough to force the reader to continually use the more resource-hogging processes, the reader will not be able to sustain a steady pace and will start to forget what he or she has read. The more time and mental resources a reader expends on a small area of text, the more information from previous sentences the reader forgets (Smith, 1985). According to VanPatten (2002), this phenomenon occurs because the brain has a limited capacity for processing information. Using inefficient processing mechanisms places increased demand on the brain's already limited resources and when the demand finally exceeds this capacity, the brain must "dump" information stored in working memory to make room for incoming information (VanPatten, 2002, p. 757). Some loss of information is inevitable -- the reader can't possibly remember every word --, but if there is little to no information held in working memory to which the reader can compare new information,

then the reader loses any sense of the text as a whole (Smith, 1985). Disconnected words and phrases give the reader no sense of accomplishment and offer the reader no incentive to read further. In this scenario, the reader will soon become disengaged or never become engaged in the first place. While this may happen now and then to L1 readers, L2 readers are particularly vulnerable to this phenomenon as you will see below.

1.3. L2 Reader Vulnerability to Crashes

For the time being, let's assume L2 readers use the same processes as L1 readers. That is a big assumption, but there is evidence for it; studies have shown that L1 reading competence is a powerful predictor of L2 reading competence (Gelderen et al., 2004, p. 27). You can see how the processes described would be prone to crashing more often in the L2 learner's brain. First, the L2 reader lacks the expansive vocabulary of the L1 reader, and will therefore be unable to automatically process many words. Researchers give wildly differing figures as to how many words an L2 reader needs to read comfortably. On the lower end, Hirsh and Nation (1992) claim that the L2 reader needs 5,000 words to read native texts comfortably, Schmitt (2008) has concluded that L2 readers need 9,000 words, while Grabe and Stoller suggest an even larger vocabulary of over 11,000 words (Grabe and Stoller, 2002). All these estimates are greater than the 2,000 higher-frequency words contained within graded-readers used by L2 readers (Hirsh and Nation, 1992, p. 693). But it only gets worse from there; L2 readers lack not only the lexical vocabulary but also the phrasal vocabulary needed to process sentence chunks automatically. Furthermore, aside from colorful idioms and pragmatic 'politeness phrases', traditional language teaching does not emphasize the extent to which language is composed of set phrases. L2 learners learn grammatical rules -- not likely combinations (Lewis, 1996, p. 15). These practices deprive L2 readers of the brain's most efficient reading program: automatic phrase recognition.

Moving down the list of processing mechanisms, the L2 learner is still at a disadvantage. Even though the L2 reader has likely had more explicit instruction of the grammar rules of the target language than a native speaker of that language, his or her grammatical knowledge -- although more formal -- will, in addition to being imperfect, still be less automatic and, therefore, slower than that of a native speaker.

Just as L1 readers must resort to less efficient subprocesses when they encounter an unfamiliar word, so must L2 readers. The difference is L2 readers must use their less-efficient processes more often. This page contains approximately 364 words, if an L2 reader comprehends 95% of the words on this page -- a figure Grabe and Stoller (2002) deem acceptable -- the L2 reader must engage his or her inefficient processes no less than 18 times. And not only must L2 readers employ these inefficient subprocesses more often than L1 readers, they must do so with less chance of successfully resolving the ambiguity. L2 readers may not be as aware of individual morphemes in the same way that they are less aware of phrasal vocabulary, so they might not be able to determine the meaning of a word from its parts. They may be able to guess the word from context, but there is no guarantee that they will guess the meaning correctly such as in the example with “brawling” above (Laufer, 2003). Schema may be of no help either; as I will explain later, students from different cultural backgrounds may not have schema that matches what the text requires. Like the L1 reader, the L2 reader may simply forego trying to understand the word and instead try to make sense of the sentence which, again, is more difficult for the L2 reader. If the L2 reader still does not understand, he or she might skip the entire sentence. In some cultures, this may not even be an option. Some students may have a tendency to avoid ambiguity, and may spend more time and resources on a difficult word before finally giving up and moving on (Hofstede, 1991).

L2 readers do not have a good set of options. They either have to constantly consult their dictionaries which leads to loss of any sense of cohesion of the text, or they must skip what they are unable to decode which may be a prohibitive amount of the text. In either case, L2 readers will find themselves frustrated, disengaged from the text and comprehending very little. They will have exceeded Van Patten's working memory threshold and must discard any incoming information before the brain can even process it. This working memory threshold is effectively much lower for L2 readers. Even when using the most efficient, automatic recognition processes, the reader is still using his or her L2 which means he or she will be expending more resources than an L1 reader using those processes. Those inefficient processes in an L1 reader's brain are even more so in the brain of an L2 reader. Increased demand for attentional resources combined with the higher failure rate of their processing mechanisms ensures that L2 readers will regularly cross the working memory limit causing their brains to deactivate schemata and dump information needed to make sense of incoming information.

1.4. L2 Schemata

The hierarchical processing systems are certainly compromised in an L2 reader's brain, but what about the L2 reader's schemata web? A reader may have a very dense and expansive schema web for any number of subjects, but these may be completely inaccessible when he or she is reading in his or her L2. For one, the text may only trigger culturally specific schemata. A text about baseball is unlikely to trip any schema threads in the mind of a European, the same way a text about cricket would fail to activate schemata in my American brain. Indeed, studies have illustrated that students perform better on comprehension tasks after reading a text specific to their own culture (Lee, 2007). Furthermore, schemata on the same topic may differ from culture to culture (as well as within individuals) (Steffensen, 1977). An American who reads a

text about World War II written in English by a Russian would not benefit as much from his or her schemata as a Russian reader would. Americans would approach the text with the schema threads for the Normandy Invasion or Pearl Harbor activated, but that would not help them much for reading a passage about the battle of Stalingrad. Their general *war* schemata would be activated so they would be able to quickly process words dealing with war in a general sense, but they would process the relevant proper nouns much more slowly. There is experimental evidence to suggest that subjects better understand a passage about a particular topic when it is written from their own cultural perspective. In Steffenson et al. (1977), 20 American and 19 Indian[2] adult subjects each read two passages about a wedding: one passage detailed an American ceremony and the other, an Indian ceremony. After reading the passages, the subjects completed a free recall task and answered questions involving inferential comprehension. To prevent a cultural effect on scoring, each task was scored by both an American and an Indian grader. When the data was analyzed, it showed that the subjects read faster, recalled more details and made fewer distortions of the passages written from their own cultural perspective. The study does not say if the Indian subjects were native English speakers, and given that they generally took longer to read the passages than did the Americans, I would guess that at least some were not. However, I do not think this undermines the conclusions of the study as the difference in their performance between the passages was similar to that of the Americans.

Studies like Steffenson et al. (1977) show that cultural knowledge is important for reading comprehension, but even if L2 readers have the matching schemata in his or her L1, there may be no way to access it while reading an L2 text because the topic was absent from their L2 materials. An unfortunate, although possibly necessary, fact of language learning is that

[2] The study did not use data from one Indian subject because the subject misunderstood the task.

language textbooks tend towards safe, bland topics (Roth, 2011). If L2 readers veer too far from such material, they will discover that these textbooks have done little to prepare them for more topic-specific vocabulary. A learner whose information comes exclusively from L2 textbooks would be equipped with the schemata to talk generally about going to the doctor, the TV schedule, sports or choosing a major, but their L2 training would do little to help them have more in depth discussion of the French Revolution, philosophy, art, deforestation or any of the hot-button issues of the day. The schemata for these topics may exist in their L1, but most L2 materials do not give them a bridge to it.

1.5. Systems Online: Constructing Meaning

Up to this point, I have focused mainly on what happens when a reader's processing functions break down, but now I will shift the focus to what happens when the processes run smoothly and the brain can keep pace with the incoming information. As the brain stitches the incoming information to the stored information, the reader begins to build what Brantmeier (2012) calls a "text model". The text model is simply the explicitly stated meaning of the text. If a reader has generated a text model, he or she can understand the text as a whole rather than a series of unconnected sentences. Of course, if a reader only understands the explicitly stated meaning of a text, he or she is probably missing out on a great deal of the text's meaning; a reader cannot understand hidden implications, irony, and allusions within a text, or form an opinion of a text using a text model alone. Clearly, In order to truly understand many types of writing, particularly fiction, a reader needs a more sophisticated model. Brantmeier (2012) calls this higher level model the "situation model". A situation model incorporates the reader's understanding of what the author wishes to convey along with the reader's understanding of the text as it relates to his or her prior knowledge. Simply put, "to construct a situation model is

tantamount to comprehension of a text," (Zwaan and Radvansky, 1998, p. 163). Therefore, reading teachers must help learners develop situation models and acquire the skill to construct them independently.

1.6. Concluding the Theory and Presenting the Goals of the Lesson Unit

Readers, L1 and L2, have both efficient and inefficient processes. The efficient processes are automatic word and automatic phrase recognition and when engaged along with the appropriate schemata, everything runs smoothly. Sometimes, such as when a reader encounters an unfamiliar word, these processes fail. If they fail, the reader still has other processes such as guessing from context that can allow the reader to continue. Using these inefficient processes, however, drains working memory -- the very thing readers need to make sense of what they read. Working memory stores words in the brain and stitches them to the new incoming words to create a coherent story (or article, or essay or whatever genre the text happens to be), but if the readers use their inefficient processes too much, they will not have the available working memory to do this. If they use up their working memory completely, they may lose information as fast as it enters the brain and become lost. On the other hand, if readers have enough working memory and the necessary background knowledge, they can begin constructing a situation model and thus comprehend the text. For L2 readers, keeping efficient processes engaged, maintaining a supply of working memory and constructing a situation model is difficult. L2 readers encounter many unfamiliar words per page and so must constantly resort to inefficient processes. Doing so means that they will quickly exhaust working memory and will be unable to construct a mental representation of the text. Even if they are able to construct a situation model, it may contain gaps and distortions because the L2 reader lacks subject-specific and culture-specific background knowledge. How to help L2 readers then? From the theory of reading I have outlined, it is clear

that reading instructors must find ways to keep L2 reader's efficient processes engaged, ease constraints on working memory, and provide background knowledge needed to build situation models. This literature review explores techniques that will accomplish these goals. The next section will discuss teaching vocabulary and other ways to improve the reader's efficient processes, the second will discuss textual modification as a means to reduce the need for inefficient processes and thus ease constraints on working memory, and the final section will explore schemata building activities to help the reader construct a situation model. After the literature review, there will be an example lesson unit to illustrate the principles articulated here and provide a blueprint for how to make reading more productive, rewarding, and enjoyable for language learners.

2. Improving Efficient Processes

I have explained how relying on inefficient reading processes can cause the L2 reader to quickly exhaust his or her working memory. To prevent the L2 reader from spiraling into information overload, it would be best to obviate the use of these processes. Therefore, a top priority must be to find a way to bolster readers' most efficient processes: word recognition and phrase recognition. Research shows that strong readers are efficient readers. One study of skilled and unskilled L1 readers revealed that the time delay between when students were shown a word and when they vocalized the word was significantly shorter for the group of skilled readers (Perfetti and Hogaboam, 1975). Another study showed that skilled L1 readers recognized familiar words in a list of unfamiliar words much more quickly than their unskilled counterparts (Perfetti and Hogaboam, 1975). Studies such as these constitute evidence that strong readers have well-developed automatic processes. Furthermore, being able to rely on automatic processes means the reader will not have continual interruptions which means automatic

processes are crucial in enabling the L2 reader to read painlessly. In the following sections, I will explore techniques that improve readers' automatic processes by making new words familiar and making familiar words automatic.

2.1. Making New Words Familiar

It was difficult to determine what exactly the role of vocabulary in my lesson should be. The research on reading and vocabulary did not conform to my presupposition that the literature would unanimously support incidental vocabulary acquisition through reading, and I found myself asking whether I was concerned with the students' net gains in vocabulary or with vocabulary as a means to increasing reading comprehension. Certainly, vocabulary needs to be addressed in some fashion. Expanding vocabulary would increase reliance on automatic processes and thus make for a stronger reader, but how to teach vocabulary? As stated earlier, researchers disagree on exactly how many words an L2 reader needs to read comfortably. Suppose the figure was the relatively low 5,000 as Hirsh and Nation (1992) estimated. Can all those words really come from direct vocabulary teaching? Even if teachers somehow find time to teach all these words, how do they get students to process them automatically? It takes multiple exposures just to learn a word let alone process it automatically (Laufer, 2003, p. 573). Before undertaking such an arduous slog, it is worth considering less direct methods of vocabulary instruction as direct instruction places considerable demand on class time and students' attention spans. Educators such as Day (2003) and Mason and Krashen (1997) have touted extensive reading as a way to increase vocabulary, but will readers really learn words incidentally as they read?

The experimental data, however, does not support anything but a weak version of this hypothesis. To be sure, students do incidentally acquire some words from reading but at an

abysmally low rate of 5 words acquired per every 7,000 read (Laufer, 2003, p. 574). At this rate, an L2 learner would have to read over 300 books of 20,000 words in order to acquire 5,000 words. I do not know of many university-age learners who have read that many books in their L1 let alone their L2. However, there may be a way to improve the rate of acquisition of new words through reading: glossing. Glossing -- identifying likely unfamiliar words and giving readers definitions of the words in the page margins (Ko, 2005) -- is similar to incidental vocabulary learning through reading, but it corrects some of the false assumptions that incidental learning makes. Incidental learning assumes that L2 readers will notice unfamiliar words which is not always the case, and even if they do notice an unfamiliar word, there is no guarantee that they will guess the meaning correctly (Laufer, 2003, p. 570). Glossing, however, identifies the word for the reader and provides a definition so that the reader will not have to guess.

Several studies have focused on glossing as a means of vocabulary acquisition. Hulstijn, Hollander and Greidanus (1996) for example, compared the effects of glossing to both dictionary use and reading by itself on vocabulary learning. The study also examined the effects of frequency of exposure on word acquisition. The study divided 78 advanced Dutch learners of French into three different groups: the gloss group, the dictionary use group, and the control group (reading by itself). The experiment presented the students with a short story by Guy de Maupassant containing 16 target words which had been pilot-tested with students of the same level to ensure unfamiliarity. Since the study also examined the effects of frequency of exposure, the target words were divided into two groups: those occurring once and those occurring three times. In the gloss group, the targets words were bolded and the students received a definition for each of the words in their L1 in the margins. An additional 16 low-frequency words were glossed to make the target words less salient (Hultstijn, Hollander and Greidanus, 1996, p. 330). The

other two groups did not have modified texts. The students were given 25 minutes to read the story and were then asked to complete a set of comprehension questions. Afterward the students took a vocabulary posttest in which they were given a list of 32 words, sixteen of which had appeared in the text, and were asked to identify which words had appeared in the text and then give definitions for those words. A separate recognition test followed to confirm that the subjects had no preknowledge of the vocabulary (Hultstijn, Hollander and Greidanus, 1996, p. 331). The recognition test confirmed the results of the pilot study; the researchers found almost no preknowledge of any of the target words. Finally, the students took an additional posttest in the same session in which the students gave the meanings of the target words but were prompted with the words in the context of the story (Hultstijn, Hollander and Greidanus, 1996, p. 330). While it would be reasonable to think that providing the words in context would give the students a chance to guess the meanings and thus taint the results of the study, the researchers had earlier noted that the words had been specifically selected as to be extremely difficult to infer their meanings from context (Hultstijn, Hollander and Greidanus, 1996, p. 330). The students did not know about any of the vocabulary tests and had believed they would be tested on comprehension only. To ensure reliability, the first and third posttest were scored by two graders each with correct responses earning a full point and partially correct responses earning half a point. As the researchers hypothesized, the gloss group performed the best on both the first and the third test (the second test was just to confirm the students had no preknowledge of the words) while the reading alone group performed the worst. The gloss group scored a mean of 3.2 points while both the dictionary and reading alone group scored a mere 1.4. The dictionary group scored on average more full points than the reading alone group. The study also confirmed that frequency of exposure also influenced acquisition; subjects were also more likely to correctly

define words that occurred three times instead of once. When given the words in context, the differences were more pronounced. The gloss group scored an average of 7.8 points, the reading only group scored an average of 4.2 and the dictionary group scored an average of 4. Again, on this test, the dictionary group earned more full points than the reading alone group. Skeptics among you readers may wonder whether remembering 1.8 more words than the control group (or 3.6 more words with context) is truly notable. Keep in mind, however that this technique requires no additional class time, and the students in the study read a relatively short story of only 1,500 words. Given a longer text (like the one in the lesson plan presented after this literature review), the students could learn even more words at a rate faster than reading alone. It may also be possible to increase these gains by using glossing in conjunction with schema building activities that introduce vocabulary words.

Hulstijn et al. (1996) suggests that glossing is an improvement over incidental learning through reading alone, but does it matter whether the definition given is in the target language or the learner's L1, and do these gains last? Miyasako (2002) tested both of these questions. The study looked at the effects of both L1 glosses (definitions given in the reader's L1) and L2 glosses (definitions given in the reader's L2) on Japanese English learners of both high and low English levels. The study also looked at the effects of multiple choice glosses, glosses that gave the reader multiple definitions of the word and left it to the reader to determine the correct one. The theory behind multiple choice glosses being that if the student expended more effort to determine the correct definition, the student would be more likely to remember the word (Miyasako, 2002, p. 4). The experiment divided the 187 third-year high school students into different groups based on their level (low or high) and the type of gloss they received (L1, L1 multiple choice, L2, L2 multiple choice, no gloss, and no reading) (Miyasako, 2002, p. 5). The

students were given 25 minutes to read a 500 word passage and complete a comprehension test. The passage contained 20 target words that had been chosen by administering a pilot test. In the glossed conditions, the target words were underlined. After the comprehension test, the subjects were given an eight-minute, 15-item vocabulary test. The students were not told in advance of the vocabulary test so that they would not consciously attempt to memorize the vocabulary. 18 days later, the subjects took an identical delayed post-test (Miyasako, 2002, p. 6). The results from the immediate posttest suggested that both L1 and L2 glosses as well as both single and multiple choice glosses aided vocabulary learning with the L2 multiple choice gloss group achieving the highest mean score of 9.41. The L1 multiple choice glossing group (mean score of 6.78) outperformed the no gloss group (mean score of 6.45) but not significantly. All of the groups outperformed the no reading condition. The L2 (mean score of 8.13) and L1 (mean score of 7.96) single gloss groups both significantly outperformed the no-gloss group (Miyasako, 2002, p. 7). When taking English level into account, the study found that L1 glosses benefited lower level learners while L2 glosses benefited higher level learners. These were encouraging results for the use of glossing, but they did not last. On the delayed posttest, the glossed conditions except for the L1 multiple choice gloss, outperformed the non-glossed condition. However, all of the conditions performed significantly worse. The L2 single gloss, L1 single gloss and the L2 multiple choice gloss group had mean scores of 6.77, 6.83 and 6.38 respectively – not significantly different from each other but significantly higher than the no-gloss and no-reading groups (5.77 and 4.86 respectively) (Miyasako, 2002, p. 8).

Although the full effect of glossing may be only temporary, Miyasako (2002) still shows that readers retain more words even two weeks later than they would without glossing. Furthermore, word acquisition is a cumulative process; each exposure broadens and deepens

word knowledge and increases the chances that the reader will permanently acquire the word (Schmitt, 2008, p. 333-335, Laufer, 2003, p. 573). In conjunction with other techniques that would provide more exposures, glossing could be a powerful tool for vocabulary teaching, but that is not the only benefit of glossing. Other studies have supported the use of glossing to aid vocabulary acquisition (Ko, 2012, Rott 2007), but, the primary benefit of glossing, which I will explore in the next major section, is that it improves comprehension and supports efficient processes.

Although effective, glossing by itself cannot shoulder the burden of teaching the reader thousands of words; the decay of word knowledge seen after two weeks in Miyasako (2002), however, could be mitigated by the use of other techniques that would provide additional exposures. What about simply teaching the vocabulary directly before having the students read? One study that examined the effects of direct instruction on word recognition and comprehension was conducted by Fukkink, Hultstijn and Simis (2005). In this study, the researchers attempted to increase word recognition speed by having students complete intensive vocabulary training exercises on their laptops for thirty minutes a day. At the end of the study, the researchers found that the students had significantly increased their word recognition speed (Fukkink, Hulstijn and Simis, 2005, p. 69). However, this did not translate to increased reading comprehension (Fukkink, Hulstijn and Simis, 2005, p. 70). The goal in my lesson is not to increase students' vocabulary *per se*; it is to help students understand a text. With limited class time, teachers cannot afford to employ a technique that accomplishes the first without fulfilling the second, and, since direct vocabulary instruction does not help with comprehension, it will not work for my purposes. However, if a technique demonstrably helps students comprehend a text and also leads to gains in vocabulary – which will increase word recognition and thus better automatic

processes – then that would be a worthwhile technique. Pre-teaching new words can still be effective -- just as long as vocabulary acquisition is not the sole objective. Instead students should receive new words as part of a package that includes pictures and background information and presents them in a context that is relevant to the story not housed solely on vocabulary learning. In other words, I am talking about schemata building and activation. Schemata building and activation techniques, in addition to introducing new words, help provide a framework or skeleton on which to build the reader's understanding of the story. These techniques will be detailed further below along with the role of schemata in building situation models.

2.2. Making Familiar Words Automatic

The techniques I have discussed thus far have mainly concerned introducing new words. Improving the automatic processes of L2 readers, however, goes beyond introducing new words. Introducing new words creates a form-meaning link in the minds of students, but this form-meaning link, although essential, is not enough for the reader to be able to truly understand a word (Schmitt, 2008). Just as with acquiring grammar rules, acquiring a word is not an all-or-nothing proposition. Rather, it occurs in an order that has not been documented yet. A word itself is more than a one-dimensional string of characters but a thing of many facets. In addition to understanding a word's basic meaning a reader must also learn the associations the word evokes, the collocations of the word, grammatical patterns in which one uses the word and constraints on the word's use (See, for example Celce Murcia and Larsen Freeman, 1998, ch. 2). A learner does not acquire all these facets of word knowledge at one exposure, but after repeated exposures at varying intervals. Laufer states that a student needs at least 10 exposures before successfully acquiring a word (2003, p. 573). Here is another area where glossing and general incidental

exposure to vocabulary through reading could really help. Reading can supply these needed exposures without the monotony of direct instruction.

In addition to deepening the imprint words leave on the mind, incidental exposure can expand knowledge of familiar words. Many facets of word knowledge are difficult or impossible to teach explicitly (Schmitt, 2008, p. 334). Humans do not think, speak or write in isolated words; we produce language in chunks of words that often have meanings that cannot be derived from their constituent words (Lewis, 1997, p. 14). I am not speaking merely of colorful idiomatic expressions like *out of the blue* or *it's Greek to me* -- much of the language we speak, hear and read comes packaged in these "highly probable" combinations (Lewis, 1997, p. 14). Words are finicky about how they can be combined with other words. An unnatural combination will raise any native speaker's alarm. One simply does not say "I desire the salmon," or "It's fifty-five past six," and if one did, it would "raise" eyebrows -- not "lift" them (Lewis, 1997, p. 10). To complicate matters further, grammar rules cannot predict with certainty which words can combine with each other making direct instruction of collocations absolutely futile unless an instructor can somehow teach every single acceptable combination with each vocabulary item (Lewis, 1997, p. 14). Reading, however, lets the learner observe a familiar word in its native environment with its natural companions and get a sense of how native speakers use the word productively.

If word-knowledge is multifaceted, it is also multileveled. Not only must readers know a word's collocations, connotations, usage and multiple meanings; they must quickly recall them when encountering the word. In addition to the innumerable words the L2 reader has yet to learn, there are still many the L2 reader recognizes but not automatically. Automatization -- like many other language phenomena -- occurs in stages which are referred to in Dekeyser (2007) as the

declarative stage, the procedural stage and the automatic stage. A learner achieves the declarative stage immediately with the presentation of information such as a grammatical rule or in this case, a word and a definition. The procedural stage is a bit harder to reach. After learners practice the information presented at the declarative stage, recognition and production of the formerly new knowledge become habitual. Finally, when learners consistently produce or recognize the word without error, they have reached the automatic stage. There are, of course, no clear boundaries between the procedural stage and the automatic stage. Before processing of a word becomes automatic, it first becomes faster and more accurate. To say that a learner has procedural knowledge of a word could mean that recognition of the word is relatively slow or that it is nearly (but not quite) instant and that production of the word is error prone or nearly flawless. Another way to bolster the students' automatic processes is to help them move words further along the procedural stage and ultimately to the automatic stage. To conclude my discussion of improving efficient processes, I will look at two reading rate techniques that do precisely that.

Chang (2012) looked at two techniques for improving reading rate: repeated reading and timed reading. The theory behind repeated reading is that automatization occurs in stages as reviewed in Dekeyser (2007). Repeated reading may not have much effect on words that are completely unfamiliar, but repeated exposures to the same passage can help the reader progress from inaccurate processing of a familiar word, to accurate processing, and finally to automatic processing (Chang, 2012). When familiar words become automatic, there will be more processing resources available for unfamiliar words and meaning construction (Chang, 2012). The case for using timed reading, a technique in which readers are subjected to one form of time pressure or another (Chang, 2012), in an L2 context is based on the notion that L2 readers compensate for their poor (relative to L1 readers) reading ability by reading slowly, rereading or

engaging their less efficient processes (Chang. 2012). In theory, compelling readers to complete a passage in a limited amount of time will wean them off of these compensatory behaviors (Chang, 2012).

Chang's hypothesis was that both repeated reading and timed reading have increased speed at no cost to comprehension and that readers maintain this speed increase when given new texts just as other studies had shown (Chang, 2012). The hypothesis in Chang (2012) was indeed supported. The students in both the timed reading condition and the untimed reading made significant gains in reading speed. The timed reading group read an average of 45 words a minute faster on the delayed posttest than they did on the pretest while the repeated reading group read an average of 20 words faster (Chang, 2012). Meanwhile, the readers showed no loss of comprehension (Chang, 2012). These results suggest that timed reading and repeated reading may be effective techniques to improve automaticity. Together with vocabulary strengthening techniques such as glossing and schemata building they form an effective approach to improving readers' efficient processes.

The lesson unit at the end of this literature review will take a threefold approach to improving efficient processes: schemata building activities to introduce new words, glossing to reinforce new words and improve the rate of incidental vocabulary learning and reading rate activities to improve recognition speed of already familiar words. Increasing vocabulary and thereby the word recognition rate will help keep readers' efficient processes online and prevent them from using less efficient processes. Increasing automaticity will help keep these processes running at maximum efficiency. Reviewing text vocabulary after the readings through tasks that encourage use of words from the text will further support vocabulary expansion. Vocabulary expansion is one benefit of reading; however, the goal of reading instruction needs to be

improving comprehension and efficient processes. Doing that requires easing demands on working memory.

3. Easing Demands on Working Memory with Input Modification

Working memory is perhaps the most precious commodity to the reader. The reader needs working memory not only to handle incoming information, but also to resolve any ambiguity that incoming information may bring with it. However, what truly makes working memory valuable is that it is limited in supply (Van Patten, 2002). I have explained how an L2 reader has effectively less working memory than an L1 reader. Now, I want to help the L2 overcome this effectively lower threshold. As Schmidt (2001) has observed working memory and attention are closely linked; therefore, the techniques explored here to maximize working memory are those that focus attention in useful places and keep it from straying down confusing paths as well as those that alter the input so as to be comprehensible to the L2 reader.

One way to improve the experience of L2 readers is modifying native texts to be more accessible to them. To the English learner, a page of English text is a dense, impenetrable forest, but by employing techniques such as *textual enhancement*, *simplification*, *elaboration* and *glossing*, instructors can light a path for the L2 reader to follow. *Textual enhancement* refers to the use of "visual enhancement methods such as underlining, bold facing, color-coding, italicizing, capitalizing or using different fonts as a means to promote the processing of linguistic items" (Lee, 2007). *Simplification* is a technique that partially or entirely eliminates long utterances, low-frequency vocabulary and complex structures (Oh, 2001, p. 71). *Elaboration* operates on a similar principle as simplification only instead of removing difficult vocabulary and structures, it leaves them intact while providing comprehensible explanations in the

following utterances (Oh, 2001, p. 70). Finally, as mentioned earlier, *glossing* refers to the technique of giving the reader a short definition of a keyword in a text (Ko, 2012, p. 56).

Van Patten's (2002) theory of input processing and in Schmidt's theory of attentional resources (2001) both provide theoretical justification for these techniques. In theory, these techniques should prevent the reader from exceeding the working memory threshold by providing input that is easier to process, intervening before the reader engages his or her less efficient processes or by directing the reader's attention efficiently.

3.1. Simplification and Elaboration

Simplification has been used to aid second language acquisition since before World War II. By removing complex vocabulary and grammatical structures simplification makes input easier to process and therefore less taxing on the learner's working memory. If there are fewer low-frequency items, the reader can continue to use his or her automatic processes without interruption and thus have enough processing resources available to create a cohesive model of the text. Some studies have indeed reported that readers of simplified L2 texts perform better on comprehension exercises than do readers of unmodified L2 texts (Oh, 2001). Simplification, then, seems to be a viable solution to the problem of working memory overflow -- as long as the reader only reads simplified L2 texts. If the goal of teaching L2 reading is to enable students to read native texts, then simplified texts miss the mark. There are already countless simplified books on the market. Most of these are written from a list of only 2,000 words (Hirsh and Nation, 1992) which is far short of the 11,000 words Grabe and Stoller (2002) say are necessary to read native texts for enjoyment and still short of the 5,000 words Hirsh and Nation recommend (Hirsh and Nation 1992). Simplified texts would undermine reading as a technique for increasing word knowledge through exposure. The negative effects of simplification go

beyond depriving students of words and structures though. Simplified texts may also dilute the ideas of the original text. In one informal study, a teacher used a simplified version of *The Cay,* a novel that addressed themes of racism and prejudice. Class discussions of the novel revealed that the students were completely oblivious to these themes and considered the book as a simple story of adventure and survival (Marianne, 2007).

Though simplification may allow the L2 reader to read with a certain ease and enjoyment, language teachers need a different technique to prepare their students for native texts. Elaboration shows promise as a technique that could be an effective way to transition from the safe, walled-garden of simplified materials to authentic native texts. In elaborated texts, the more difficult vocabulary and grammatical forms eliminated in simplified texts remain but are explained in the following sentences. Below is an example (taken from Oh, 2001, p. 75-76).

> Baseline text:
>
> We are less credulous than we used to be. In the nineteenth century, a novelist would bring his story to a conclusion by presenting his readers with a series of coincidences -- most of them wildly improbable.
>
> Elaborated:
>
> We are less credulous than we used to be in the past. We don't easily believe in coincidences, or accidental happenings. In the nineteenth century, a novelist would bring his story to a conclusion by presenting his readers with a series of coincidences, though most of them were wildly improbable.

Though the elaborated passage is longer, it effectively places less demand on the reader's working memory. From the example above, the word *credulous* would likely derail high-intermediate English learners' automatic processes causing them either to retreat to their resource-draining decoding processes or to check their dictionaries and thus lose the flow of the text completely. With the baseline text, there would be no way to prevent either scenario, but the elaborated text would intervene on the L2 readers' behalf providing comprehensible input to

explain the vocabulary item before the readers had to resort to either their less efficient processes or their dictionaries. Studies on the effects of elaboration on reading comprehension have shown that elaboration is comparable, if not superior to, simplification (Yano, Long and Ross, 1994, Oh, 2001). Yano, Long, and Ross (1994) conducted a study on 483 English learners from various Japanese universities. After determining that the students were of comparable English proficiency, the researchers divided the students into three groups. The first group received a packet of unmodified passages, the second a packet of simplified passages, and the third group a packet of elaborated passages (Yano, Long and Ross, 1994). After reading the passages, the students took a multiple choice comprehension test. The results of the test showed that students who read the simplified passages performed best overall, but not significantly better than the students who read the elaborated passages while both the readers of the simplified and the elaborated passages performed significantly better than the readers of the baseline passages (Yano, Long and Ross, 1994). Furthermore, elaboration proved to be superior to simplification in one aspect. Before administering the test, the researchers had classified each question according to whether it tested the student's ability to replicate information, synthesize information or make inferences (Yano, Long and Ross, 1994). As they hypothesized, the students who read the elaborated passages performed significantly better on the inferential comprehension questions than the readers of the simplified or baseline texts (Yano, Long and Ross, 1994). Oh (2001) was able to replicate the experiment with Korean students. The results of Oh's experiments were nearly identical to those of Yano, Long and Ross; the students who read the simplified passages scored the highest but not significantly higher than the students who read the elaborated passages (Oh, 2001). As in Yano, Long and Ross's study, the students who read the elaborated passages

outperformed the other students on the questions testing the ability to make inferences (Oh, 2001).

Elaboration will provide the reader with exposure to low-frequency vocabulary and complex structures all while reducing the chance that the reader's brain will crash. Moreover, according to Yano, Long and Ross, elaboration helps aid inferential comprehension by giving readers "a second look" at the ideas within the passage allowing them to build a mental model based on concepts rather than just words (a situation model) (Yano, Long and Ross, 2001, p. 219).

3.2. The Effects of Glossing on Comprehension

As I detailed in the theory of reading, the downward spiral into a memory crash often begins with an unfamiliar word. In the face of such a word the reader will lose the sense of the text as a whole because he or she is currently thinking inefficiently or, even worse, consulting the dictionary. Earlier, I had discussed how glossing can aid vocabulary acquisition, but now I want to explore the effect of glossing on reading comprehension by preventing readers from turning to their inefficient processes or the dictionary and thus stopping the spiral before it begins and leaving readers with the working memory to comprehend the text. Several studies have found glossing to have a positive effect on comprehension (Ko, 2005, Lomicka, 1998, Rott, 2007). Ko (2005) investigated the effects of glossing on Korean learners of English. "Will glossing aid comprehension of English texts and, if so, is a gloss more effective in a reader's L1 or L2?" the study asked. The 106 university students were divided into three groups: a group that received a text with no glosses, a group that received a text with glosses in Korean, and a group that received a text with glosses in English (Ko, 2005). To determine which words would be glossed, Ko conducted a pilot study using subjects of the same background and asked them to identify

difficult words in the text that would be used in the main study. In addition to these words, Ko glossed words that were crucial to understanding the text (Ko, 2005). After reading the text, an article from *The Reader's Digest*, the students completed a multiple choice comprehension test. In addition to this quantitative study, Ko conducted a parallel qualitative study with 12 students who were asked to think-aloud as they read and these think-aloud protocols were recorded (Ko, 2005). The data from the quantitative study showed that students in both of the glossed conditions performed better than the control group, but only the English gloss group performed significantly better. Data from the think-aloud protocols in the qualitative study showed that 1. students who had glossed texts consulted the glosses and 2. students in both glossed conditions made more inferences and skipped fewer words than did students in the control group; in other words, they read more efficiently (Ko, 2005).

The last form of input modification that I investigated is textual enhancement or altering the appearance of the text to make it more noticeable to the reader. Textual enhancement has traditionally been used as a technique of the Focus on Form approach (Long in Bot, Ginsberg and Kramsch, 1991). Focus on Form was a response to Communicative Language Teaching which discouraged explicit grammar instruction in favor of authentic, communicative tasks. When students taught by the communicative approach failed to acquire native grammatical forms, some researchers decided that form needed more emphasis. Textual enhancement would allow teachers to emphasize form without sacrificing class time to direct instruction (Lee, 2007). But does it work? The record is mixed according to Han, Park and Combs (2008). Some studies do indeed show that textual enhancement aids form acquisition. Sang-Ki Lee (2007) studied the effects of textual enhancement on acquisition of the English passive form. Lee found that students who had been given passages with the passive forms in boldface performed significantly

better on a form-correction task than those who had been given unenhanced passages (Lee, 2007). While some studies have reported results similar to Lee's, findings have been far from consistent. White (1998), for example, found that textual enhancement had an insignificant effect on French-speakers' acquisition of English pronouns.

Although there may not be conclusive evidence from quantitative studies, qualitative analysis from think-aloud protocols and surveys has shown that readers do notice the enhanced words even though they may not understand precisely what it is they are to learn from them. In White's study, one student believed that the words had been enhanced because they were "difficult" (White, 1998, p. 103). Even though the enhancement did not achieve the desired effect, it was salient enough to attract attention (White, 1998). A 1995 study by researchers at the University of Hawaii included think-aloud protocols. Data from these protocols showed that the enhanced items were more noticeable to the readers (Schmidt, 1995). Textual enhancement therefore could have a place in a lesson plan when identifying key words for creating a point of reference. When readers consult the aforementioned glosses in the margins, textual enhancement could lead them back to their place in the text.

The text in the lesson will include a combination of these input modification techniques. Elaboration will explain some words or phrases, and in places where elaboration would be inefficient or unnatural glossing will provide definitions for unfamiliar words. Textual enhancement, although not necessarily effective by itself, will provide a reference point for the reader to find his or her place in the text after glancing at a definition in the margins. These combined techniques should prevent the reader from overusing his or her inefficient processes and maintain a level of working memory to look at the story as a whole, thus aiding the construction of a situation model. But working memory is not the only thing a reader needs to

construct a situation model. To do so also requires background knowledge. In the final section, I will detail ways to increase readers' background knowledge so they can build a situation model that fits the text.

4. Situation Models and Schemata

With improved word recognition, and more effective use of working memory, the L2 reader will have the processing power to begin constructing a situation model of the text. While reading, the brain first produces a surface model, then a text model and finally a situation model. A surface model is simply the brain's photographic image of the lines and squiggles that form the letters on the page. A text model is the stated meaning of those lines and squiggles without any further inference -- simply a linguistic decoding of the sum of the meanings of each words. A situation model, however, goes beyond a literal interpretation; it is the intended meaning of the text as the reader understands it (Brantmeier, 2012, 160). As I have stated earlier, a coherent situation model is nothing less than true comprehension of the text and aiding students in developing situation models should therefore be the goal of reading instruction (Zwaan and Radvansky, 1998, p.163).

All the brain needs to do to create a surface model is to see the text -- no comprehension required -- so it really doesn't need to be addressed in reading instruction. To create a text model, the brain must linguistically decode what the text says which is something in which L2 learners have had plenty of training; language instruction generally focuses on linguistic decoding. Some of the techniques discussed in this paper -- particularly glossing which decodes less familiar words for the reader -- will assist the reader in building a text model, but for the most part, building a text model is already addressed by language instruction. Traditionally, intensive reading has focused on the text model (Brown, 1994), but my approach places this intensity

instead on the situation model. The situation model is the model readers are most likely to have difficulty constructing (Brantmeier, 2012) and is therefore the focus of my lesson. Building a situation model requires far more than linguistic decoding because it is non-linguistic in nature. Furthermore, a situation model is composed not only of the knowledge in the text, but the knowledge the reader brings to the text. By understanding these two main properties of situation models, as I will illustrate further in the following sections, we can help students create them.

4.1. The Nature of Situation Models

A situation model is not composed of words; the reader experiences it more like a film -- a film that incorporates all the sensory information implied within the text (Koning and Van der Schoot, 2013, p. 264). Evidence for this theory comes from various studies in which groups of students were asked to recall a story that they had experienced in a given medium. Some students may have listened to the story in audio format while others watched a video of the same story while still others read an article. When researchers compared the data from the students' recall tasks, they found that there was a high correlation between mediums (Zwaan and Radvansky, 1998). Such studies show that a situation model is a multi-sensory experience that is independent of the original medium.

It takes more than a stream of sensory information to comprehend a story though. One cannot convey plot through sensory information alone; the brain must evaluate the relevance of the incoming information to the overall shape of the story and then file that information into the relevant story dimensions. In Zwaan, Langston and Graesser (1995, 292) and Zwaan and Radvansky (1998, p. 167) these dimensions were identified as *time*, *space*, *cause and effect*, *goals*, and *characters*[3]. *Time* and *space* together form both the setting of the story as well as the

[3] The terms used in these studies were *time*, *space*, *causation*, *intentionality* and *protagonist* but I have substituted everyday terms for the latter three.

progression of time and the movement of the characters through the imaginary environment (Zwaan and Radvansky, 1998, p.168). *Cause and effect* is the causal relationship between the events and actions in a story. The *goals* dimension, is of course the intentions of the characters and the obstacles that get in their way. Finally, *characters* are the people (or anthropomorphized animals and objects) that inhabit the story. As the reader progresses through the story, he or she updates each of these dimensions according to the incoming information (Zwaan and Radvansky, 1998). Information that does not affect the status of these dimensions is much less likely to be stored for later use (Zwaan and Radvansky, 1998). For instance, if the incoming information describes a messy apartment and a young male occupant who has been on the couch watching TV for hours, the reader would update both the spatial dimension and the character dimension of his or her situation model. The spatial dimension would now include the size, shape and contents of the apartment as could be gleaned from the text and supplied from the reader's imagination, and the character dimension would now include a young, lazy, unmotivated man. As the reader continues, the spatial dimension of the story may grow to include new locations and the story may supply new information about the lazy young man that may either strengthen the reader's impression of him or revise it. Thus the reader's situation model has the potential to change with every sentence.

Understanding every word and every utterance within a text is insufficient for constructing a situation model because a situation model is not contained solely within the text; a situation model is what happens when the incoming information from the text merges with the reader's prior knowledge (Zwaan and Radvansky, 1998, p. 162). How could it be otherwise? Every text relies on the reader engaging certain assumptions while reading. For example, the sentence "The big number 37 smashed the ball over the fence," assumes that the reader is

familiar with baseball. Almost all readers from my own linguistic and cultural background would interpret that sentence as being about baseball even though the sentence never explicitly mentions baseball (Anderson, 1985, p. 372-373). Only when this incoming textual information interfaces with prior knowledge (assuming the reader has such prior knowledge) does the reader see the whole picture. As mentioned earlier, prior knowledge is organized into what researchers call schemata. In addition to playing an important role in processing, according to Zwaan and Radvansky (1998, p. 162), schemata form the building blocks of situation models. I, however, think *skeleton* is a more apt descriptor of the function of schemata here. Schemata are basic outlines of generic situations (Zwaan and Radvansky, 1998). The mention of a visit to a restaurant generates a generic script that involves a table, a waiter, menus, fellow diners, and of course, food. This scene itself is a featureless, faceless, polygonal thing, but when the text supplies details, it becomes a fleshed-out representation of a situation involving characters with motives set in a particular place and time (Zwaan and Radvansky, 1998). Now, instead of a generic restaurant scene, the reader beholds a 1950s diner with red cushioned booths, neon track lighting and a jukebox in the corner. The waitress, Darlene, has had a long day but does not look forward to returning to her cramped apartment and her ungrateful, surly lout of a husband. Such a scene would be difficult, if not impossible to reconstruct if the reader lacked schema for an American restaurant or subschema for ‘50s diners. When a reader lacks a particular schemata set, he or she will have a harder time constructing a situation model and, therefore, have a harder time comprehending the text. One piece of evidence for this claim comes from a study of four groups of students: third-grade soccer fans, third-grade non-fans, seventh-grade soccer fans, and seventh grade non-fans. The subjects read a text about soccer and then took a test to evaluate the situation models they had created. Though the seventh graders were, of course, the more

proficient readers, the third-grade soccer fans developed more detailed models than the seventh-grade non-fans (Zwaan and Radvansky, 1998). The fans were able to access schemata that were unavailable to the non-fans and, therefore, had a skeleton on which to graft the details of their situation model. In this way, the situation model comes from the reader as much as the text. In order to build a multidimensional model, the reader must come to the text with some ideas or opinions about the subject matter.

4.2 Building the Foundation for Situation Models with Prereading Activities

Although exactly how the brain constructs a situation model remains mysterious, researchers have shown, as described above, that a situation model is 1) non-linguistic or at least not purely linguistic in nature and 1) dependent on the reader having the appropriate schemata. Therefore, prereading activities designed to help build situation models and thus improve comprehension should be devoted to building appropriate schemata and provide a multi-sensory, multi-dimensional mold for the text to fill.

Taglieber, Johnson and Yardbrough (1988) compared three prereading techniques: providing pictorial context, pre-questioning and vocabulary pre-teaching. In the study 40 Brazilian undergraduate EFL students each read four different passages under four different conditions: the pre-questioning condition, the pictorial context condition, the vocabulary pre-teaching condition and the control. All subjects experienced each condition though they did not experience them in the same order. Under the pictorial context condition, the instructor showed slides to the students and encouraged discussion and commentary. Under the pre-questioning condition, the subjects were given a one sentence summary of the passage and were prompted to think of questions that the story might address. These questions were then written on the board for the students to view as they read the passage. Finally, the vocabulary teaching condition

consisted of providing the students with example sentences of eight words. The students would then negotiate the meaning of the words through class discussion until the correct meaning had been reached. The words had been chosen by English instructors for their importance to the story and likelihood that the subjects would be unfamiliar with them. The control group, of course, received no pre-reading activity. After reading each passage, the subjects took a test consisting of eight open-ended questions and ten multiple choice questions. While the vocabulary pre-teaching group outperformed the control group, both the pictorial context group and the pre-questioning group significantly outperformed the vocabulary pre-teaching group. In this study both the pre-questioning and pictorial context techniques provided at least a partial foundation for a situation model. Both techniques helped the readers activate and build schemata. The pictorial context activity did so by showing the students the subjects of the text in context and allowing them to discuss and share their prior knowledge of the subjects in the text with themselves and the teacher. The prequestioning activity presented the context of the passage and effectively elicited background information from the students by asking them what they wanted to know about the texts. In addition to activating and adding to the subjects' schemata, pictorial context activity also helped the subjects create a sensory rather than linguistic representation of the text. Taglieber, Johnson and Yardbrough (1988) shows that prereading activities designed to build schemata and encourage sensory representation are not only effective in promoting comprehension, but are demonstrably more effective than preteaching vocabulary. Furthermore, viewing and discussing pictures is more likely to be an engaging, positive experience than reading unrelated example sentences.

Another way to build schemata for story comprehension is to use supplemental readings or other media to provide background information relating to the setting or themes of a story.

Multiple readings have shown to be effective in helping students develop richer, more nuanced situation models. In one four-week study, students were asked to read a text about the history of the Panama Canal and then summarize their understanding of it. Each week, the students read a new text about the canal. After analyzing the students' summaries from each week, the researchers found that as students read more texts about the Panama Canal, they wrote more complex summaries demonstrating understanding of complicated and indirect causal relationships (Rouet, Britt and Perfetti, 1996). In other words, each additional text enriched the students' situation models or at least the causal dimension of those situation models. There is no reason these supplemental materials must be in the form of a reading. They could be videos, presentations or audio recordings. After all, a situation model is independent of medium (Zwaan and Radvansky, 1998).

In order to create a situation model, readers must transform the textual input into a multisensory movie in their brains. Some readers do this naturally, but Koning and Van Der Schoot (2013) reviews several studies that show that lower-level readers can benefit from being trained to visualize a text. Several studies have shown that L1 readers of all ages performed better on recall tasks when they came to the reading with training in how to visualize a text (Koning and Van Der Schoot, 2013). Although these studies did not include L2 readers, the technique shows promise for language learners. Translating textual information into non-linguistic information can help the non-native speakers neutralize their disadvantages.

Unlike the other mental representations of a text, a situation model is not made up of words; it is made up of images and other sensory information as well as ideas and concepts -- many of which come from the reader. That is why prereading activities designed to boost comprehension must do more than introduce words. Reading instruction should introduce

students to the ideas and concepts the texts requires them to have, and provide images or other sensory information or even coach students in visualizing to help students imagine the text as a multisensory experience. Therefore, in the following lesson plan these techniques will be exemplified.

Conclusion

The techniques outlined in this literature review form a three-pronged approach toward making reading friendlier, more productive and less frustrating for the language learner. Beginning with the efficient, or automatic, processes I will review the benefits of each technique. The reading rate activities will strengthen the L2 readers' efficient processes by making them more efficient. Reading rate activities transform familiar words and phrases that use just a little bit of working memory to recognize into automatic words and phrases that use almost no working memory. Schemata building prereading activities such as slide shows, discussions, and other media that provide background information on the subject can introduce and highlight new vocabulary that will expand the reach of the reader's efficient processes while glossing will reinforce the vocabulary that the background information activities provide. Inefficient processes can help in a pinch, but mostly, they are a memory drain so the best approach is to avoid them which brings us to the other function of glossing. In the lesson, glossing is used alongside textual elaboration to prevent the reader from resorting to inefficient reading processes. An unfamiliar word or a confusing phrase might interrupt the reader or force him or her to search frantically through the context in which said word or phrase appears for some clue to decode it, but there is no guarantee of success. With elaboration and glossing, the explanation or definition is right there in the text or in the margins and the reader continues with minimal interruption. Even if the learner is already familiar with the glossed word, seeing the annotation may contribute to their

understanding, fix any misunderstandings and remove any doubts. Finally, in addition to pre-teaching vocabulary, the schemata building activities give the reader the missing background knowledge he or she will need to truly comprehend the text.

Traditional reading instruction has debated the merits of top-down vs. bottom-up processing and organized instruction in terms of pre-, during and post-reading tasks. The lesson plan of the present paper's reading theory aims to mitigate constraints on readers and their effectively limited memory and attention capacities. At the same time and working toward the same end, this reading pedagogy strives to inhibit inefficient processes and encourage efficient processing. Finally, aiding learners in their construction of a situation model is prioritized. Therefore, this paper represents a departure from the traditional approach in two important ways. First, while the traditional approach to L2 learning encourages the use of what I would call inefficient processes to compensate for the learners lack of vocabulary, this approach prescribes intervention before the reader engages in compensatory behaviors. Second, while traditional intensive reading focuses on linguistic decoding and thus developing a text model, this approach shifts that intensity toward developing a situation model.

traditional approach	**my approach**
encourage compensatory behaviors	**intervene before student engages in compensatory behaviors**
intensity is focused on the text model	**intensity is focused on the situation model**

In the following pages I will employ these techniques in a lesson unit for high-intermediate Chinese learners of English. Over the week, the students will read a short (16 page) story about life on a Martian colony originally written for young adult native speakers. The text

may be intended for a young adult audience, but it will not be easy for non-native speakers; the text includes many idiomatic expressions, slang terms and subject-specific words. However, the text has been modified with glossing, elaboration and textual enhancement to reduce interruptions in their reading. Additionally, before each section of the story there will be schema-building activities; the students will read a supplemental text, watch a video, engage in a discussion, or listen to some basic facts about Mars while viewing images. All of these activities are designed to provide the reader with the background information on which they can build a situation model. Instead of the usual confusion, the students will come to the text fully prepared and if they do get lost, the text itself will show them the way. The students will have a positive experience with reading in English and maybe even learn something about the Red Planet.

Specialized Intensive Reading Unit

Introduction

The following lesson unit demonstrates how the techniques detailed above can be used in the classroom to create a reading lesson that is engaging and rewarding. Throughout the lesson students will receive support not from boring lectures that analyze the language, but from interactive activities that build schemata. By the end of the lesson the students will feel they have accomplished something both from their understanding of the story and the tasks they have completed. Although this lesson was designed for a specific class working with a specific text, the techniques here could be used for any class of L2 learners with any text.

The Class

The class for which this lesson is intended consists of 12-16 Chinese EFL (English as a foreign language) high school students of upper-intermediate English proficiency. These students have been studying English since third grade as is compulsory in the Chinese education system. Currently they have about 5 to 6 hours of English class a week which is typical for a Chinese high school (Nunan, 2003). They are taking this class because they are interested in improving their English for the purposes of going to an English speaking country as either an exchange student or as part of a study abroad program. These students read little fiction as part of an English class and have never completed an English novel on their own. In fact, as I have learned from talking to Chinese students, they have not necessarily ever read a complete novel as part of a Chinese class either. This lesson will ease them into reading fiction in English.

At this point, the students are able to identify main ideas and supporting ideas in articles, and answer questions about explicitly presented information. To some degree they can classify information by differentiating fact from opinion. By the end of the lesson unit the students will

be able to infer meaning from the text that has not been presented explicitly, apply background knowledge to their understanding of a story, evaluate the decisions of the characters, put themselves in the situations of the characters, and give their opinions of the story. They will demonstrate these abilities by completing tasks such as a book review and a postcard from Mars.

Unit Objectives

Why read fiction as part of an EFL class? From a strict language teaching perspective, fiction provides rich linguistic input. Fiction contains both spoken language in the form of dialogue between characters and written language in the form of descriptions. Fiction also gives language learners extra exposure to lower-frequency vocabulary. Educational culture is another reason for English learners to read fiction. Novels and short stories are part of the curriculum in most Western high schools and universities so English learners should be familiar with the process of reading and responding to them. Furthermore, fiction can be used to promote critical thinking which is something that Western education -- particularly higher education -- values.

At the end of this week-long unit, the students will be able to read, understand and react critically and personally to a work of short fiction for young adult native English speakers. Additionally, they will have strengthened their vocabularies and schemata. Each day, the students will use both their imaginations and their judgment. Through writing assignments and class discussions, the students will put themselves in the main character's situation and evaluate her decisions. From my experience teaching Chinese students, I have found that they are often shy and reticent in class discussions, but they will complete a task if they receive specific instructions which is why I include prompts for discussion that ask specific questions but allow opportunity for expansion.

Class Materials

One of the advantages of this unit is that it requires few materials. The students will need a copy of the readings as well as a few handouts. The teacher will also need a classroom equipped with a computer, a projector, a document camera (not necessary, but would enhance the explanation of the handouts) and an internet connection in order to display the slideshow presentations. Such accommodations are common in big cities in China.

Class Procedure

This class will meet daily for 60 minutes. On the second through fifth day, the class will begin with a timed reading activity. On the second day, the passage will be taken from the European Space Agency's page for young readers and on the third through fifth day, the readings will be taken from *Timed Readings* by Edward Spargo (1989). The timed readings will follow the procedure laid out in Spargo (1989): (a) The teacher will hand out the reading and allow the students to scan the reading for thirty seconds; (b) after scanning, the students will wait for the teacher to signal to begin reading; (c) the students will be instructed to read slightly faster than their usual pace. The teacher will give the signal and start a timer on an electronic device (a smart phone, a tablet or on the computer projector) and make sure it is visible to the students. When the students finish the passage, they will record their time, put the reading aside and begin the questions. The teacher will allow three and a half minutes for the reading and an additional two minutes to complete the questions. After the time has elapsed, the teacher will go over the answers with the students and the students will record their times and their scores on a chart they will use throughout the week (and possibly for the duration of the class).

After the timed reading, the students will complete a review activity that focuses on the material of the previous day. They may be asked to recall background knowledge, retell the story thus far, or discuss the different characters.

Schemata building activities will follow. The teacher will prompt the students on the subject matter to find out what vocabulary and background information they already know. Then the teacher will use a combination of pictures, text and other media to fill in the gaps between what they already know and what they will need to know for the reading. The first day of the unit will commence with schemata building activities because there will be no timed reading activity and no material to review.

After the schemata building activities, the students will complete an activity to reinforce their new background knowledge. They may complete a collaborative task or participate in a group discussion.

If there is time left over, the students will use it for reading. Otherwise reading will be assigned as homework. The readings will be modified with both glossing and elaboration. The text will also be enhanced to show the students which words have been provided with glosses and where the text has been elaborated.

The fifth day will be devoted to assessment tasks. The students will demonstrate both their comprehension of the story and their ability to apply the background knowledge they have acquired to a new reading.

The Reading

Selecting a reading that resonates with the students is critical. The wrong reading can derail an otherwise perfectly planned lesson. The reading I have chosen is Jennifer L. Holm's "Follow the Water" taken from the short story compilation *Shelf Life: Stories by the Book* edited

by Gary Paulsen (2003). “Follow the Water,” is about Georgie, a plucky teenager who lives on Mars. Her parents are scientists; they are well-meaning but emotionally somewhat distant. Georgie loves Nana, her grandmother, most of all. Nana has always made up for the affection Georgie’s parents were too busy to provide, but Nana is on Earth and Georgie misses her. When Georgie hears that Nana only has a short time to live, she hatches a plan to return to Earth even though it means risking her own life. Throughout the story Georgie is plucky and proactive making her appealing to teenage readers. Hit young adult books *The Hunger Games* and *Divergent* both feature strong young heroines. Readers may notice similarities between Georgie and Katniss Everdeen. Chinese students in particular will identify with Georgie’s life. She is far away from everything familiar to her and must forgo most of the comforts of her life back on Earth. Her situation is not entirely unlike that of highly competitive Chinese students. In China, many students go to special boarding schools where they study day and night for their college entrance exam -- a test much longer and tougher than the SAT. There they practically live at their desks where they study day and night (*Wide Angle* China Prep). Although it is out of devotion that their parents send them to these schools, the students still miss their families. If this lesson were adapted for students already living abroad, Georgie’s experience will resonate even stronger.

Day 1 (Monday)

Day 1 Goals

All the activities on day 1 further the goals of building the students Mars schema and vocabulary, and partially fill in the spatial dimension of the readers’ situation models before they even begin reading the main reading. At the end of this day, students will be able to produce basic facts and vocabulary about Mars and identify hardships Mars colonists would face.

Day 1 Procedure

This lesson unit will occur sometime after the first week of class. It assumes that the teacher has conducted introductions and is now familiar with the students and that the students are now familiar with each other so the teacher will not need to make time for getting-to-know-you activities.

0:00-10:00: Introducing Mars

The class begins with a presentation set to a slide of the planet Mars. The teacher will ask students to identify the planet. Once the class understands they are looking at Mars, the teacher will ask the students to write down three words they associate with Mars while emphasizing that there are no wrong answers. The students will then write their words on the board. The teacher will then ask the students to explain why they chose the words they did. What is their connection to Mars? This activity will reveal what the students already know about Mars and the ideas they associate with the red planet so the teacher will know what to emphasize during the schema building activities. The discussion then opens up to any additional information the students know about Mars. Next, the students receive basic facts about Mars from the PowerPoint[4] slides. They learn about its size, atmosphere, surface temperature and weak gravity. These slides will give the students direct vocabulary instruction that is necessary to understand the week's readings as well as help to build their schemata about Mars. If they did not know that Mars is hostile to human life before, they certainly will now.

10:00-25:00: Missions to Mars

The following two slides ask the students if they think that people will ever go to Mars and if so, if people could ever live on Mars. The next slide shows concept art depicting NASA's

[4] Here I use PowerPoint as a generic, widely understood term to refer to most presentation making software. The slides I made for this lesson were actually made in Google Slides.

proposed mission in the 2030s. On the following slides the students meet Bas Lansdorp, the possibly-crazy founder of Mars One, a private venture that promises to land humans on Mars in 2023 – but not to bring them back. After his introduction, the class will watch part of a short video on Mars One's plan to bring people to Mars (Time, 2013). Neither the business plan of Mars One nor the mission schedule are realistic (Hutchinson, 2013, The Economist, 2013), but the slides and video will help develop students' schemata and vocabulary for the readings ahead. The living arrangements of the new Martians and the challenges they face are similar to those of the characters in the story the students will read. Before showing the video, the teacher should instruct the students to watch the video and try to understand the basic plan of the mission and to pay special attention to the images of Mars. Afterwards, the teacher will ask a series of comprehension check questions on the following slides. After the comprehension questions, the students will tackle the more discussion worthy questions "Would you go on this mission -- why or why not?" and "Why would anyone go on this mission?" in their small groups and then share their responses with the class.

25:00-45:00: Packing for Mars

Now that the students are well acquainted with the conditions of Mars, it is time for them to use their imaginations. The students will again split into their groups of three to four and designate a recorder. On the screen there will be a picture of a cardboard box. The teacher will explain to the students that this box is one cubic meter. Anything the group wants to take to Mars should fit in this box and there is only one box for the whole group. The students will not have to worry about food, water, oxygen or other life-support equipment. They only need to think about items that would make their life on Mars more comfortable. In addition to recording a list, the students must also explain their reasoning for each item they take. This will allow the students to

talk about the material presented thus far in a communicative and task-based activity. It will give them more of an idea of what they would have to give up to go to Mars. The students will then share their lists with the class.

45:00-60:00: Article about Mars

At this point, the students know some basic facts and vocabulary about Mars as well as the proposals for what a mission to Mars might look like. Next, in order to inform them of the more technical aspects of living on Mars, reinforce and expand their basic knowledge of Mars and provide more exposure to the vocabulary words they have learned, the students will read a short, informative article on the challenges of living on Mars (Babowice, 2012). Before distributing the reading, the teacher should show the reading on the document camera if one is available, and make students aware that the text has been modified so as to be easier to read. The text now includes both textual and picture glosses and includes elaboration in some passages. The teacher should instruct the students to keep track of the challenges of manned-missions to Mars. After reading, the students should complete the comprehension questions at the bottom of the hand out. The class will then check their answers together if there is time or the next day in class.

Day 1 Homework

As homework, the students will write a postcard from Mars to a friend or family member on Earth. They should mention the challenges and annoyances they face living far away from home and without earthly conveniences.

Day 2 (Tuesday)

Day 2 Goals

Aside from the activity in which students decided what to take to Mars, day 1 focused mainly on the scientific aspects of a Mars mission. Day 2 will focus more on the human experience. The activities on this day will begin by building and activating schema related to analogous journeys in history. Then, there will be additional schema building activities related to teenagers' experiences. This will allow them to see that Georgie's life on Mars is full of hardships both universal to all humans and specific to teenagers. When the students finally begin the reading today, they will find the setting and challenges faced by the characters are already familiar to them. At the end of the lesson the students will have filled in the character dimension of their situation models and partially filled in the goals dimension.

Day 2 Procedure

0:00-10:00: Timed Reading

The class will begin with a timed reading taken and adapted from the European Space Agency's (ESA) website.

10:00-20:00: Review Basic Facts about Mars

When students arrive, the teacher will have a PowerPoint presentation open to a slide depicting a fantasy Mars populated by aliens humanoid and not so humanoid. The teacher will then ask the students to form groups of three or four and ask them if the scene is realistic. They should designate one person to be the recorder and, as a group, list all the details of the picture that are realistic and unrealistic. The groups will then share their lists with the rest of the class. This warm up activity serves to reactivate the schemata that the students built the previous day without simply having the students answer questions or recite facts. Instead, they can take their

knowledge from the previous day and apply it to a new situation. Additionally, this will give them practice in thinking critically about the subject.

20:00-30:00: Pioneers and Migration

Having established that the picture is incredibly unrealistic, the teacher will then change the slide to an actual photo of the actual barren, lifeless (as far as we know) Mars. I intentionally chose the most boring photo of Mars I could find to show the contrast between the fantasy and reality of Mars. As the class will see in the day 2 reading, the protagonist herself is confronting the reality of Mars after reading about the fantasy. Then the teacher will advance the slide again to a painting of the ancestors of Native Americans crossing the Bering Strait and an accompanying map. This painting will be the first in a series of images of people who have undertaken long journeys to strange, new places: the Pilgrims, the pioneers and Chinese immigrants to America. The teacher will briefly explain each group and then move on to a slide with all of the images. "What do these groups have in common?" the teacher asks aloud and writes on the board. "Which situation would be the most difficult? Why?" If my instincts are correct, the students will say the Mars scenario is clearly the most difficult so the teacher should follow up with "What is the second most difficult?" The students can discuss these questions in small groups and then share their answers with the class. This activity will build schema and introduce vocabulary related to past human migrations so the students will understand the events in the story as they relate to human history and in this way, the story will seem more real to them.

After the brief discussion, the teacher will advance the slide to the image of the Mars colony. This will help reestablish the spatial dimension of the students' situation models.

Although the Mars colony here is not exactly the same as the one in the book, it manages to convey the isolation, and claustrophobia-inducing conditions the characters must endure.

30:00-50:00: Teenagers

From here, the focus will shift to our protagonist and narrator, a fourteen-year-old girl named Georgie. Before the class gets acquainted with her directly, the teacher will spend some time building schema related to American teenagers. It might seem silly for a teacher to explain teenagers to teenagers, but these discussions will make the students think about the protagonist and her challenges in light of this stage of her life as well as expose them to new vocabulary. Moreover, these discussions could uncover important cultural differences. The teacher shows a slide with pictures of teenagers hanging out. The slide then changes to a short list of discussion questions. The students will split into groups and designate a group recorder. They will then come up as many answers for each question as they can. After about five to ten minutes, the class will reconvene and share their answers which the teacher will write on the board. If the students do not list it among their answers, the teacher should mention that teenagers need to be around people their own age and that in America, many teenagers want to assert their own identities and independence. They may feel that their parents do not support or understand them.

50:00-60:00 Reading

Now that the class is familiar with the setting and the general situation of its protagonist, they are ready to begin reading the story. Before they begin, the teacher should instruct the students to keep track of what Georgie dislikes about her life on Mars. The students will spend the remaining class time reading the story to themselves. For the duration of the reading, the teacher will keep the presentation open to a picture of the Mars One colony. The picture will help the students keep the spatial dimensions of their situation models updated. For homework, the

students will complete the worksheet that asks them to make a list of what Georgie dislikes about Mars and whether these dislikes are the dislikes of all humans in general or more specific to teenagers. On this same worksheet they must also write what changes they think would improve Georgie's life on Mars.

Day 3 (Wednesday)

Day 3 Goals

On Day 3, the activities will provide schema for understanding different types of conflict as well as schema for differentiating personality types. Readers will be able to use these schemata to update the character dimension, the causal dimension and the goals dimension of their situational model.

Day 3 Procedure

0:00-10:00: Timed Reading

The class will begin with a timed reading taken from Spargo's *Timed Readings* (1989).

10:00-20:00: Review the Story

In the reading for Day 3 the students will become better acquainted with the other characters in the story and they will uncover the central conflict of the story. The class will begin with some comprehension check questions, but they will not be in the usual format. Instead, there will be a slide with several images: a cup of beer, two aliens, a syringe, the cover of Kim Stanley Robinson's *Red Mars*, a glass of water and two scientists. The students will then form small groups. Their task will be to look at each image and try to recall if the person, creature or thing was mentioned in the story. If it was mentioned, they must explain how it appeared in the context of the story. The class will then reconvene and share their responses. From this session, a more-or-less complete version of the events of the story so far will emerge.

20:00-30:00: Introducing *Conflict*

Moving on from the review session to the schema building session, the teacher advances the presentation to a slide with the word *conflict*. The teacher gives the meaning of the word and explains that all stories have some form or forms of it. The teacher then moves through slides illustrating the different types of conflict: man vs man, man vs nature, man vs himself. Then the students will view a series of images and try to decide what type of conflict they illustrate. This activity will prepare students to identify the conflict introduced in this part of the story. Afterwards, the teacher will ask the students to come up with an example of each type of conflict from a movie, a book, a TV show, history or even current events.

30:00-50:00: IQ vs EQ

This act of the story also shows the contrast between the characters' personalities. One source of friction in the story is the interaction between characters with high IQs and the characters with high EQs. In order to help the students update the character dimension of their situation model, the teacher will help build vocabulary and schema related to IQ and EQ. First, the teacher shows a slide explaining the difference between IQ and EQ. On the following slide are two characters from *The Big Bang Theory*, a sitcom that is popular both in America and China. Sheldon, the character on the left, is a physicist who views most forms of human interaction as an inconvenience at best while Penny, on the right, does her best to teach Sheldon basic social niceties. The teacher can ask the students which character has the high EQ and which character has the high IQ. The students will then split into their small groups and the teacher will advance the slide. On this slide there are several images of people in various situations. The task students will have to complete is to decide which situations require EQ and which require IQ. Afterwards, the small groups should brainstorm a list of people who have high

IQs and people who have high EQs as well as the reasons for their choices. When the students have completed these tasks, the class will reconvene and share their answers.

50:00-60:00: Reading

The students should now be able to do what they need to do to understand the day's reading: identify types and sources of conflict and classify characters according to their personality types. The students will spend the remainder of class reading. Before they begin, the teacher should prompt them with this question (on the Powerpoint) to guide their reading:

"At the beginning of this part of the story, Georgie receives some bad news. Compare her reaction to the bad news to her parents' reaction."

Day 3 Homework

For homework, the students will complete these short-answer questions (below) involving both direct and inferential comprehension. These questions will appear at the end of the Powerpoint presentation which will be shared with the students online.

1. Find examples of each type of conflict in the story:

human vs. human human vs. nature human vs. him/herself

2. At the beginning of this part of the story, Georgie receives some bad news. Compare her reaction to the bad news to her parents' reaction.

3. Which of the characters from the story had high EQs? Which had low EQs? Provide evidence from the story that supports your conclusion.

4. What do you think will happen in the final part of the story?

Day 4 (Thursday)

Day 4 Goals

The goal of this lesson is nothing less than comprehension of the entire story which means by the end of the reading, the students will have updated all the dimensions of their

situation models. The activities leading up to the reading will provide the reader with the schema necessary to update the causal dimension and the goals dimension.

Day 4 Procedure

0:00-10:00: Timed Reading

The class will begin with a timed reading taken from Spargo's *Timed Readings* (1989).

10:00-20:00: Review Characters

After the timed reading, there will be another review activity to reactivate and strengthen the character dimension of the students' situation models. On the screen will be pictures that could resemble the characters in the story. In their small groups, the students will decide which character each picture most closely resembles. Then they must list three things they know about that character. Once the students have their lists for each character, the class will reconvene and share their results.

20:00-25:00: Introduce the Theme

After the review activity, the teacher will introduce the day's theme, risks. To prepare the students to talk about risks, the teacher will have the students perform a trust fall, an activity in which a student falls back into the arms of his or her classmates. After each student has undergone the trust fall, the students will talk about how it made them feel. The teacher will then explain that they have just taken a *risk*.

25:00-50:00: Discuss Risks

After explaining the word, the teacher will elicit other examples of risks from the students. Then the teacher will introduce the idea that some risks are worth taking while others are not. On the next slide is a series of images showing people taking various risks. The teacher should allow the students to try to figure out what each image shows and then answer any

questions they have so that the students understand each situation. The teacher then asks the students if these risks are worth taking. At that point, the students will split into small groups and brainstorm types of risks that are worth taking as well as those that are not. The class will then reconvene and share answers. Before the students begin reading, the teacher will ask them to think of a risk they took as well as the consequences of that risk. The students who want to can share their experiences.

50:00-60:00: Finish the Story

Now the students are ready to read the conclusion of the story. Since they have developed schema for various risks and consequences, they will be ready to update the causal as well as goal dimensions of their situation models. As they read, the students should ask themselves what risk they think Georgie will take. If the students finish the story, they may begin their homework.

Day 4 Homework

For homework the students should write 250-300 words answering the following question. This question will appear at the end of the day's Powerpoint presentation and will be shared with the students.

"The story has an open-ended ending; it doesn't tell us what happens to Georgie. The readers are free to decide what happens. What do you think will happen to her?"

Day 5 (Friday)

Day 5 Goals

The goal of this final lesson is to assess the students' comprehension of the story as well as their ability to apply the background knowledge they have gained to a new text. For the final assignment of this unit, the students will write a book review and from this book review, the teacher will be able to assess the development of the students' situation models.

Day 5 Procedure

0:00-10:00: Timed Reading

The class will begin with a timed reading taken from Spargo's *Timed Readings* (1989).

10:00-35:00 Minutes: Reading Book Reviews and Introducing the Final Assignment

The teacher begins with a book review activity. The students will again split into their small groups and the teacher will pass out examples of book reviews for various young adult books. Each student will have one review. On the projection screen the teacher will have several questions for the students to think about while they read.

1. What book is reviewed?
2. Is this review a positive or negative review? How do you know?
3. On what did the reviewer base his/her opinion?
4. Did the review make you want to read the book? Why or why not?

The students read their book review, attempt to answer the questions and then discuss their reviews with their small groups. After a few minutes of discussion, the teacher will have the class reconvene and the groups will share their responses.

As their final assignment for this unit, the students will produce their own review of "Follow the Water" and post it to a class blog. Although, they are free to like or dislike the story for any reason, in their review, they must mention what they thought about the characters, the plot, and the setting as these criteria encompass the dimensions of a situation model. In this way, the students will show the teacher how developed their situation models are and, therefore, how well they understood the reading. At the same time, they will have made an authentic product instead of simply filling out another test form. The students will complete this assignment as homework.

The book review task is a valid and authentic assessment tool. It is valid because it aims to assess comprehension and that is precisely what it tests. The criteria the student must address in the review correspond to the components of a situation model, and a well-developed situation model by definition demonstrates comprehension (Zwaan and Radvansky, 1998, p. 163).This assessment task does not merely ask the students to regurgitate information for the sake of the teacher. Instead, the students will produce their own authentic product that other second language learners might find useful. They will also be free in expressing their opinions making this assignment more free and enjoyable. It is important, however, that the teacher grade the test, not on the students' grammar or writing style, but on the inclusion of the elements of the situation model.

35:00-55:00: Reading Test

The teacher of this unit is interested not only in how well the students comprehended "Follow the Water," but also in whether the students acquired background knowledge and vocabulary from the story and from class and are able to apply it to future readings. Therefore, the second component of assessment will be to take a short reading test on a new article taken from *Voice of America* about the Mars rover Curiosity (Ember, 2013). The students will have 20 minutes to complete the reading and the short answer questions that follow it.

This task is a valid and practical tool for measuring reading comprehension of the article, but that is not its only purpose. Although it tests vocabulary and background information the students have learned, it is also intended to give students extra exposure to the vocabulary and concepts explored in the unit and present them in a new context. This reading will also be easier for the students because they will already be familiar with the vocabulary and schema in the article making it a more enjoyable and confidence-boosting read. The students will complete the

unit feeling that they have learned a lot about Mars and have become better readers in the process. Furthermore, the having two assessment components ensures that the teacher will get a more complete and thus valid and reliable picture of each student's ability.

If the students finish early, they will have the rest of class to work on the final assignment.

Day 5 Homework

The students will complete the book review assignment as their homework for day 5.

Conclusion

At the end of this lesson, the students will have demonstrated comprehension of a work of short fiction, and they will have learned a fair amount about Mars too. If the subject of Mars ever comes up – in class, in the news, or in conversation – the students will have the vocabulary and schemata to understand or even contribute to the discussion. The next week, the students could read another story in the same fashion about another topic. They could read about the ancient Mayans, The American Civil War, endangered species, North Pole expeditions, criminal forensics or anything else. I hope this lesson can serve as a model for adapting and teaching native texts on any of these subjects. The students will be more interested in what they read because instead of having the story fed to them by breaking down the language, they will engage with the ideas which in turn makes the language easier to process and the story come alive.

Although this lesson was written for Chinese students studying in China, these techniques would be just as useful for English teachers in English-speaking countries. The pre-teaching activities and textual modifications could ease the transition from an ESL class to a mainstream class. By offering support for the L2 learner's brain, the teacher can make the mainstream

classroom a friendlier place where the L2 students can enjoy reading just as much as the native speakers.

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Appendix A: Sample from an Informative Article about Mars

This article has been withheld to avoid copyright infringement.

I have made several attempts to contact the copyright holder to ask for permission but have received no replies.

If you wish to view the article in its unmodified form, you may visit the following url.
http://www.dailyherald.com/article/20120925/news/709259926/?interstitial=1

The article originally appeared in this paper with glosses, elaboration and images to help English learners.

Appendix B: Sample from “Follow the Water” by Jennifer Holm

beer."

He shakes his head at me, a **stern**, *serious* expression on his face. "You know I can't serve you. You're too young, Georgiana."

exasperated - angry and annoyed

"It's not like I'm gonna get drunk and get in a driving accident or anything," I say, **exasperated**.

The guy next to me, Merrick, says, "You trying to buy a beer, Georgiana?"

"No," I whisper fiercely, looking down.

cellular biologist - a scientist who studies the cells of living things

perceptive - able to understand and notice things quickly and easily

Merrick's a **cellular biologist**, and has like ten Ph.D.'s so you'd think he'd be a little **perceptive**, right? Instead, he turns to the room and announces loudly, "Hey everyone! Our little Georgiana's trying to buy a beer."

The bar bursts into hoots of laughter and clapping and shouts. I put my hands over my face, wishing I could just disappear.

I mean, this is my life.

I can't even sneak my first beer without the entire planet knowing.

geologist - a scientist who studies rocks

aren't exactly lining up - this means that few geologists want to go to Mars

The only reason I'm even here is because my father is a **geologist**, and the last batch of geologists they sent up got killed in a spring dust storm, and since then the geologists **aren't exactly lining up** to go to Mars anymore. Also because most of the geologists who got killed had once been students of my father. He's one of the only geologists in the world who knows anything about Mars because he was on the original exploratory missions.

After the Spring Disaster, as the media called it, the government begged my father to go back to Mars, which he wanted to do anyway. You could see it in his eyes every time they sent up a new batch of settlers. His one condition was that I come.

You would think I'd be pretty happy to go to Mars.

I mean, it's kind of like every kid's dream, right? But I can't stop thinking about water. Anything to do with water. Like going for a swim or taking a shower or even having a real bath.

Because we don't have any water.

supplement - something added to something else to make it complete

Once every two months a shuttle arrives with drinking water, but that's only a **supplement**. See, our main source of water is from recycling. You got it. We recycle everything-the water you spit out