Type and token frequency of conventional linguistic units in Extensive Graded Reading

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Previous studies on incidental vocabulary learning from reading were based on the idea of repetition (e.g., Horst, 2005; Pigada & Schmitt, 2006; Waring & Takaki, 2003; Webb, Newton, & Chang, 2013) which has its roots in the comprehensible input hypothesis (Krashen, 1985). This study demystifies the fundamental idea of repetition in terms of learning conventional linguistic units (Langacker, 2008) from extensive graded reading (EGR). In order to explore the frequency effects of conventional linguistic units in EGR, a corpus of 60 graded readers was constructed and analyzed from a perspective of the usage-based model (Tomasello, 2003). The results show that the token frequency of conventional linguistic units is low in the corpus, and indicate that EGR practitioners need to contrive ways to have learners pay more attention to them in the contexts of stories and effectively entrench them in memory.

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A great number of teaching methods and techniques have been proposed for utilizing graded readers (GR) to facilitate extensive graded reading (EGR) (e.g., Bamford & Day, 2003; Day, 2012). In order to have learners read "extensively" without using a dictionary, it is reasonable to suppose that many or all EGR practitioners will accept the essential condition for EGR to occur, described below, which Hu and Nation (2000) proposed. They explored how well the learners could understand a fiction text at different levels of known word density, and came to the conclusion that the most suitable known word density was 98 percent. This condition implies that the 98 percent coverage enables learners to read faster, read more, understand better, and enjoy reading without a dictionary in "the virtuous circle of the good reader" as seen in Figure 1.

Figure 1 can also be understood in terms of incidental vocabulary learning as follows. Learners can increase vocabulary size by guessing from the context the two percent of unknown words, which do not prevent them from creating the virtuous circle of the good reader. Moreover, they can relearn and unlearn the 98 percent partially

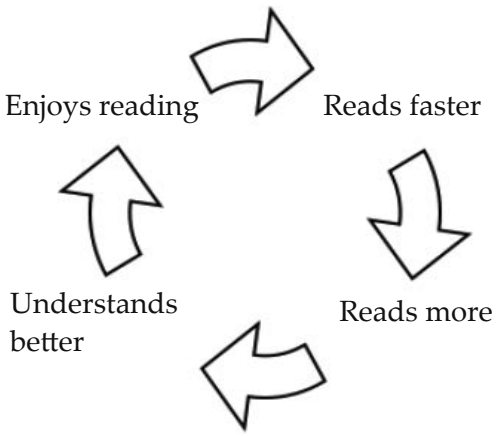

Figure 1: The virtuous circle of the good reader (Nuttall, 1996, p. 127)

known words which goes along the same line of the conclusion of the experimental study of Waring and Takaki (2003, p. 155): "... graded readers might be best used for recycling already known vocabulary than for introducing new words. This is because the results of this and other studies suggest that few new words seem to be learned from graded reading."

In spite of the pedagogical implication for incidental vocabulary learning through reading, previous studies focused on learning the two percent unknown words (Horst, 2005; Pigada & Schmitt, 2006) and investigated how to increase the vocabulary size from reading graded to ungraded readers (Nation, 2014; McQuillan, 2016). Reflecting the original idea of the virtuous circle of the good reader in EGR, we should pay more attention to the 98 percent coverage of partially known words, and consider how learners can deepen their vocabulary knowledge from a perspective of conventional linguistic units in cognitive linguistics, which are characterized as follows: "They are "units" in the sense of being entrenched cognitive routines, and "conventional" by virtue of representing established linguistic practice in a certain speech community" (Langacker, 2008, p. 218).

The conventional linguistic units can be referred to as multi-word units including collocations, lexical chunks (Lewis, 1993) and formulaic sequences (Schmitt, 2010; Wray, 2002) in L1 and L2 language acquisition. While they play an important role for the process of language learning and language use, to my knowledge, there has been no research on learning conventional linguistic units from EGR.

In order to explore how EGR can provide learners with incidental learning of conventional linguistic units, this study analyzes a GR corpus from the usage-based model in cognitive linguistics (Tomasello, 2003). Based on the empirical data, the efficacy of learning conventional linguistic units from EGR is examined. Moreover, the study tries to show what EGR practitioners should do to facilitate learners to have incidental learning of conventional linguistic units in the virtuous circle of the good reader.

Learning conventional linguistic units in the comprehensible input hypothesis in EGR

Recent research on incidental learning of "single" words from reading have suggested that learners can acquire new words (Pellicer-Sánchez, 2017; Pellicer-Sánchez & Schmitt, 2010; Pigada & Schmitt, 2006; Waring & Takaki, 2003; Webb, 2007). These studies show that repetitive meetings of words in the contexts play a crucial role for gaining new vocabulary knowledge incidentally. The role of the repetition as input through reading has its roots in the comprehensible input hypothesis (Krashen, 1985) that backs up the practice of EGR as shown in Figure 2, which is adapted from Masamura (2012).

Figure 2 can be clearly identified with what Widdowson (1990) criticized about the features of the comprehensible input hypoth-

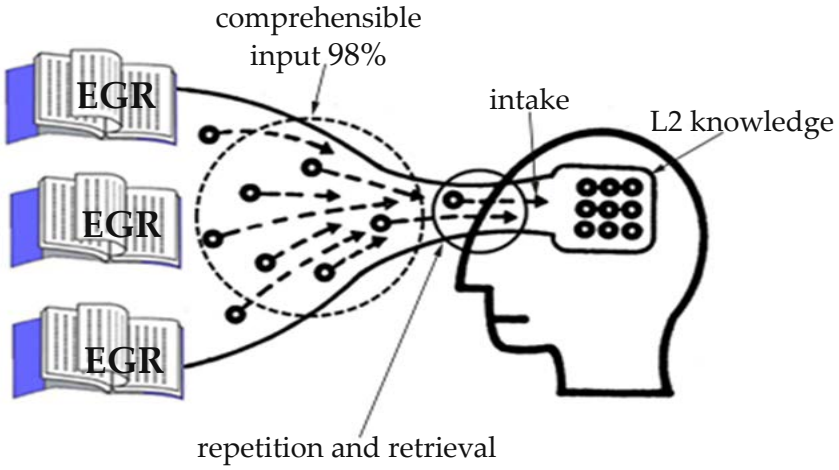

Figure 2. Visual image of the 'comprehensible input hypothesis' in EGR

esis as follows: "The theory only requires that the learner should be a kind of humanoid receptacle in a maximal state of receptivity so that the input can enter to work its mysterious way" (p. 23).

Following the fundamental idea of the comprehensible input hypothesis, experiments on incidental learning of "collocations" from reading were made (Durrant & Schmitt, 2010; Pellicer-Sánchez, 2017; Macis, 2018; Szudarski & Carter, 2014; Webb et al., 2013). These studies artificially included the same collocations (e.g., verb + noun, adjective + noun) within the texts more than once, so learners could repeatedly meet the same collocations and fill their minds with them, which would automatically activate the process of incidental learning.

However, it is important to note that such text modifications made learners have "inauthentic" experiences, as Boers and Lindstromberg (2009) pointed out. They analyzed the first 120 pages of an ungraded novel and found that it is only once that most verb-noun collocations were encountered in those pages. It is pedagogically questionable to have learners read such "unnatural" texts under the name of research on incidental learning of collocations.

As for meeting collocations in EGR, how does the comprehensible input hypothesis perceive the process of learning and acquiring such conventional linguistic units? Krashen (1985) referred to them as "routines and patterns" and explained "routines and patterns are fundamentally different from both acquired and learned language, and they do not turn into acquired or learned language directly" (p. 9).

Clearly the comprehensible input hypothesis does not take into account the roles of routines and patterns in the process of language use and language learning. It is based on this view, whether consciously or not, that the implementation of the comprehensible input hypothesis has been practiced by EGR practitioners.

On the contrary, routines and patterns that the present study refers to as conven-

tional linguistic units have been considered as essential linguistic constructions for the process of language learning and language use:

> second language learners begin not so much with generative systems as with chunks, prefabricated routines, or unopened packages, as they have been called. ... The importance of routines in language acquisition, in second language learning, and in the everyday use of non-exceptional speakers has yet to be recognized. It is probably safe to say that we are not as endlessly creative as we are wont to think, and that we rely heavily on memory and routinized phrases in our ordinary production of speech. (Gleason, 1982, pp. 355-6)

From this view of language, one may say that incidental vocabulary learning through EGR should put more focus on learning how partially known words in the 98 percent coverage are combined to form conventional linguistic units rather than learning new single words in the 2 percent.

Essential differences between language use (EGR) and language learning

In order to have learners pay attention to conventional linguistic units in the virtuous circle of the good reader, we need to further consider how EGR as language use is fundamentally different from language learning as Widdowson (1990) pointed out:

> Here then is the essential problem about natural language use for language learning. We do not want our learners to bypass language when they use it, as it is natural for native speakers to do, because they do not have the systemic knowledge as a backup resource to rely on. This is precisely what we want them to acquire and it is the purpose of pedagogy to assist them in acquiring it. (pp. 163-164)

When we accept the differences between language use (EGR) and language learning, it is entirely fair to say that EGR practitioners should intervene into the process of relearning and unlearning partially known words in EGR, so learners will not skip them, and help them to notice how they are combined to form conventional linguistic units. The idea of pedagogical intervention is contrasted with the comprehensible input hypothesis which only provides input. It takes a "non-interface" position where explicit vocabulary knowledge instructed by EGR practitioners are not interfaced with implicit and incidental vocabulary learning in EGR. In contrast, this study takes the "catalytic interface" position (Yamaoka, 2000), which considers crucial the role of EGR practitioners who explicitly teach conventional linguistic units in the GR texts and facilitate the incidental learning like a catalyst facilitating an interaction in a chemical reaction.

Aims and Research Questions

So far, we have examined the deficiency of the comprehensible input hypothesis and the inauthenticity of the previous experiments of incidental learning of collocations. Taking a stance of the "catalytic interface" position, Mizuno (2017) constructed a GR corpus and took "look" as a verb as an example of partially known words to Japanese students and analyzed the corpus from a perspective of "look + directive" as a pivot schema. Based on the analysis, this study will explore the following questions:

1. What types of directive including prepositions and adverbs can learners meet

and how many times can they meet each directive in the GR corpus?

2. What other words are combined with "look + directive" to form conventional linguistic units and how many times do they occur in the GR corpus?

3. Based on the answers to the two questions, what should EGR practitioners explicitly teach learners in order to facilitate them to notice how "look" is used in the virtuous circle of the good reader?

Methodology

Construction of Oxford Bookworms Corpus

Mizuno (2017) constructed a GR corpus of Oxford Bookworms (OBW) series. The reason why the OBW books were chosen from among many publishers was that Hill (1997) made the following comments on the quality of English:

> All texts are consistently well written, and the grading scheme is applied with thoroughness and common sense, resulting in a flowing and readable style. Simplifications reveal a deep appreciation of the original, and simple originals include some first-rate stories (p. 71)

From the OBW series, 10 popular books were chosen from each stage 1 to 6 based on the number of book reviews posted on the website "Interactive Reading Community" (Mizuno, 2015). Figure 3 shows the total number of words of 10 books for each stage which gradually increase as the stage goes up.

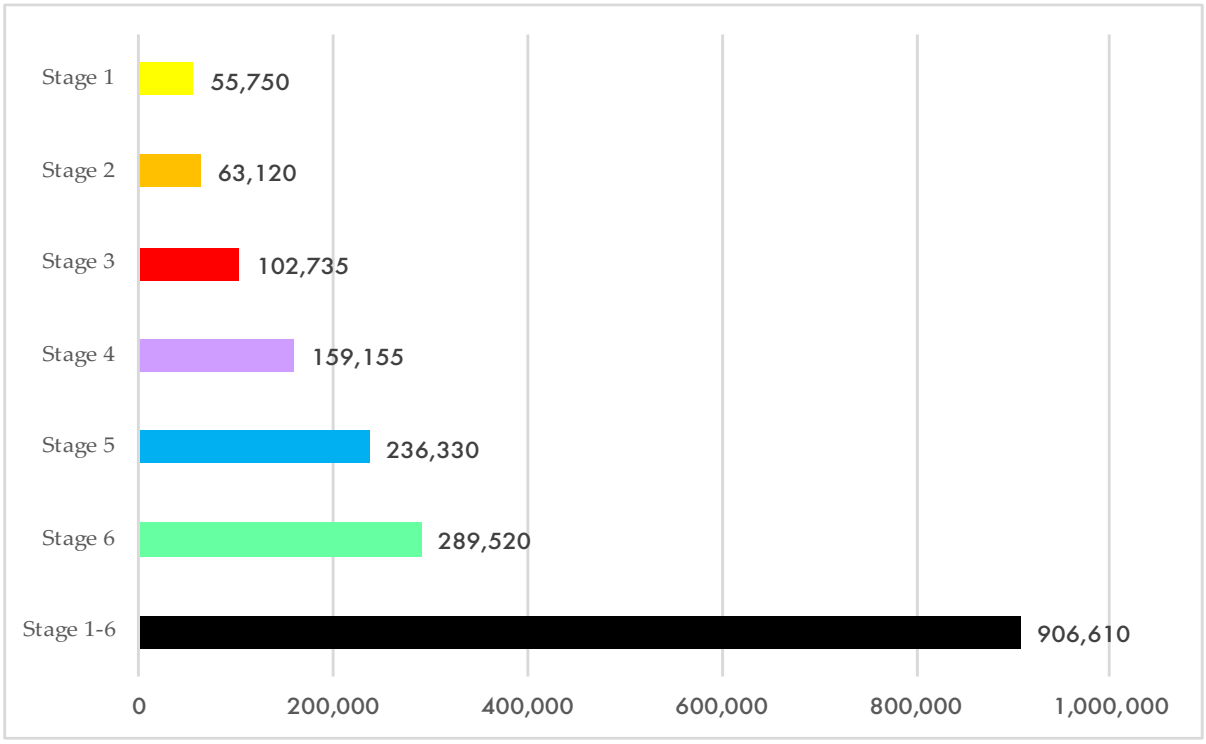

Figure 3. The total number of words of 10 books for each stage

The GSL coverage in the OBW corpus

In order to show the pedagogical and graded features of the OBW corpus, Mizuno (2017) analyzed the OBW corpus using the *General Service List* (GSL) (West, 1953). Figure 4 reveals that 78.2% on average of every stage of the OBW corpus was covered by the first 1000 words (GSL1-1000) which cover 84.3% of conversation, and about 77% on average of written texts including fiction, newspaper, and academic texts (Nation, 2001, p. 17). It is the 78.2% coverage of the GSL1-1000 that is pedagogically contrived to have learners intensively meet the essential 1000 words regardless of the stages 1 to 6. This revealed data backs up the opinion of Waring and Takaki (2003, p. 155) noted above that vocabulary learning in EGR should focus on deepening learners' understanding of partially known words recycled over and

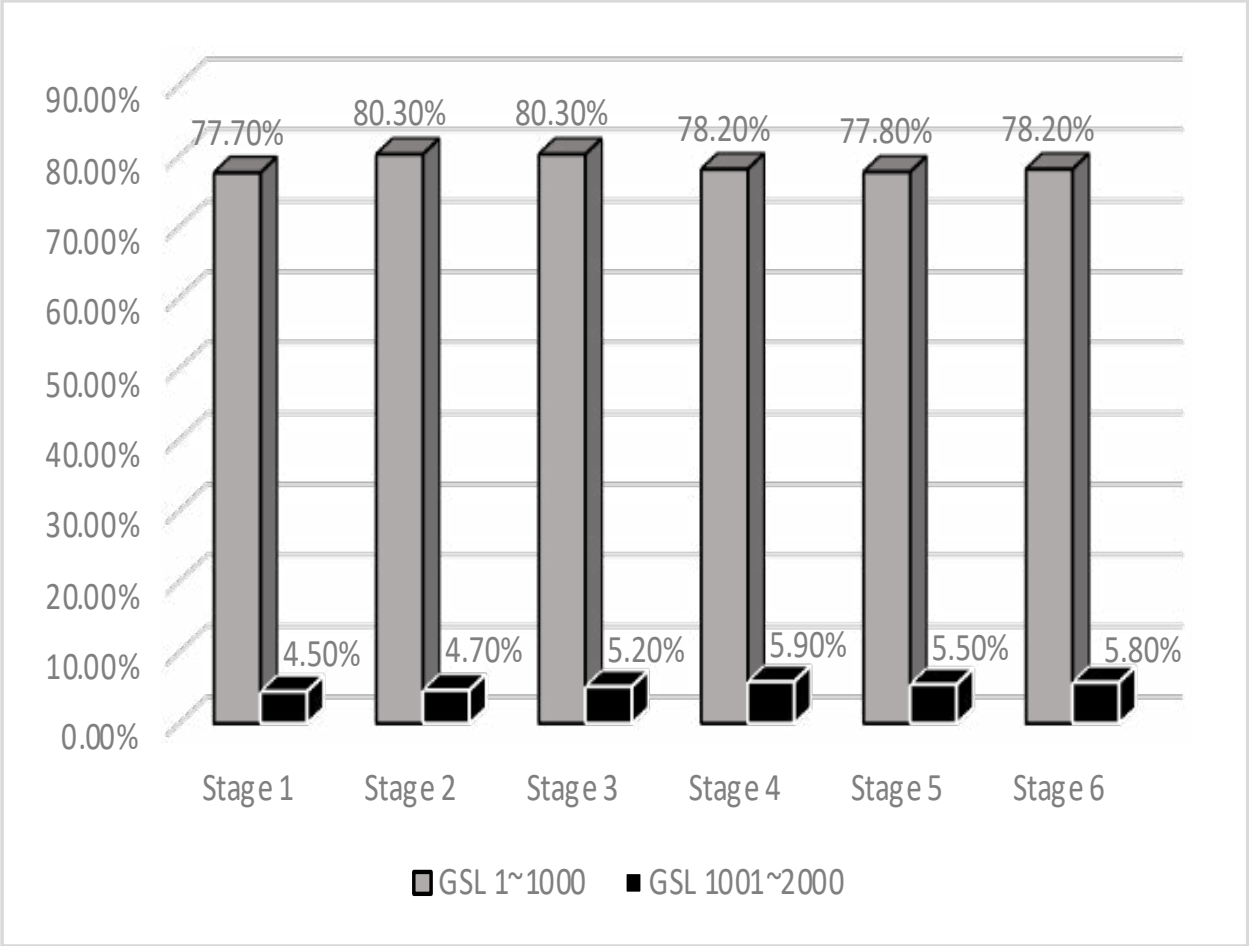

Figure 4. *The Coverage of GSL in each stage of the OBW Corpus (Mizuno, 2017: 197)*

over again through all the stages.

Key Words in Context feature on the OBW corpus

In order to analyze the OBW corpus and answer the research questions, the OBW corpus has Key Words in Context (KWIC) feature. Here is an example of KWIC feature where "look" as a verb including "looked" and "looking" is put at the center of the page in Figure 5. We can easily see what other words partially known to the learners are combined with "look" to form conventional linguistic units.

L3	L2	L1	Word	R1	R2	R3
if	you	will	look	after	them	when
Henry	stayed	and	looked	after	me	
young	woman	who	looked	after	the	children
had	you	not	looked	after	me	and
	My	father	looked	after	me	on
yellow	eyes	were	looking	at	me;	its
monster's	yellow	eyes	looked	at	me	
monster's	awful	face	looking	at	me	
serious	as	he	looked	at	me	
		I	looked	down	at	his
father	who	is	looking	for	her	reached
and	went	to	look	for	another	hiding
she	was	almost	looking	forward	to	death
		I	looked	forward	to	the
		She	looked	forward	to	our
am	awake	I	look	forward	to	my
but	now	it	looked	terrible	and	frightening
	The	captain	looked	to	the	north
these	things	I	looked	up	at	the

Figure 5. How "look" is used in the corpus of Frankenstein *at Stage 3*

A certain root meaning plus its Field of Inferability

Since "look" is a polysemous word, learners need to understand how the meanings of "look" are realized in conventional linguistic units. West (1960) pointed out how polysemous words should be perceived in EGR:

> In reference to reading a word has a certain root meaning plus its Field of Inferability. This "Field of Inferability" is an important idea. If you know the word Mouth (part of the body) you may readily in a reading context guess the meaning of Mouth of a Cave and a shade less readily Mouth of a River — even if in the mother-tongue the word for Mouth (body) is not used in these two other meanings. (pp. 47-48)

This study applies the idea of "a certain root meaning plus its Field of Inferability" (West, 1960) to understanding the polysemous nature of "look" for the analysis of conventional linguistic units. The root meaning of "look" can be described as the direction labeled 1 in Figure 6 which implies "to turn your eyes in a particular direction":

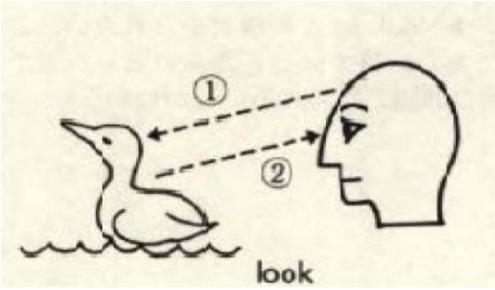

Figure 6. Image of the meanings of "look" (Masamura, 2012, p. 277)

The relationship between the direction ① and ② is that ①after you turn your eyes in a particular direction, ②you will see the appearance. This cause-and-effect relationship reflected in the meanings of "look" can help understand how "look" is used in the conventional linguistic units.

Instantiations of a pivot schema as conventional linguistic units and the type frequency and token frequency

From a perspective of learning and using conventional linguistic units, type frequency and token frequency play a crucial role (Tomasello, 2003). Taking examples in Figure 5, from the corpus of *Frankenstein,* we can abstract "look + directive" as a pivot schema. As for the types of directive, there are 7 types of directive: *after*, *at*, *down*, *for*, *forward*, *to*, *up*. That is, the type frequency of directive is 7. On the other hand, we can count how many times each directive is used in the pivot schema: the token frequency of *after* is 5, *at* is 4, *down* is 1, *for* is 2, *forward* is 4, *to* is 1, and *up* is 1. In reading *Frankenstein,* we can meet such a variety of directives. However, the token frequency of each directive is low. This study will investigate the frequency effects of type frequency and token frequency of pivot schemas including "look + directive" in the OBW corpus.

Results and discussion

Type and Token frequency of directive in the "look + directive" in the OBW Corpus

In answer to the first research question, the analysis of the OBW corpus shows that there are 20 types of directive in the "look + directive" noted in Figure 7. We can meet a great variety of directives through reading the 60 OBW books. Among them, the token frequency of "at" is 1,141 which is overwhelmingly used with "look". Focusing on the preposition "at" as an example of the directive, we will explore how "look

at X" (X implies the object of "at") is used in detail from stages 1 to 6 in answer to the second research question.

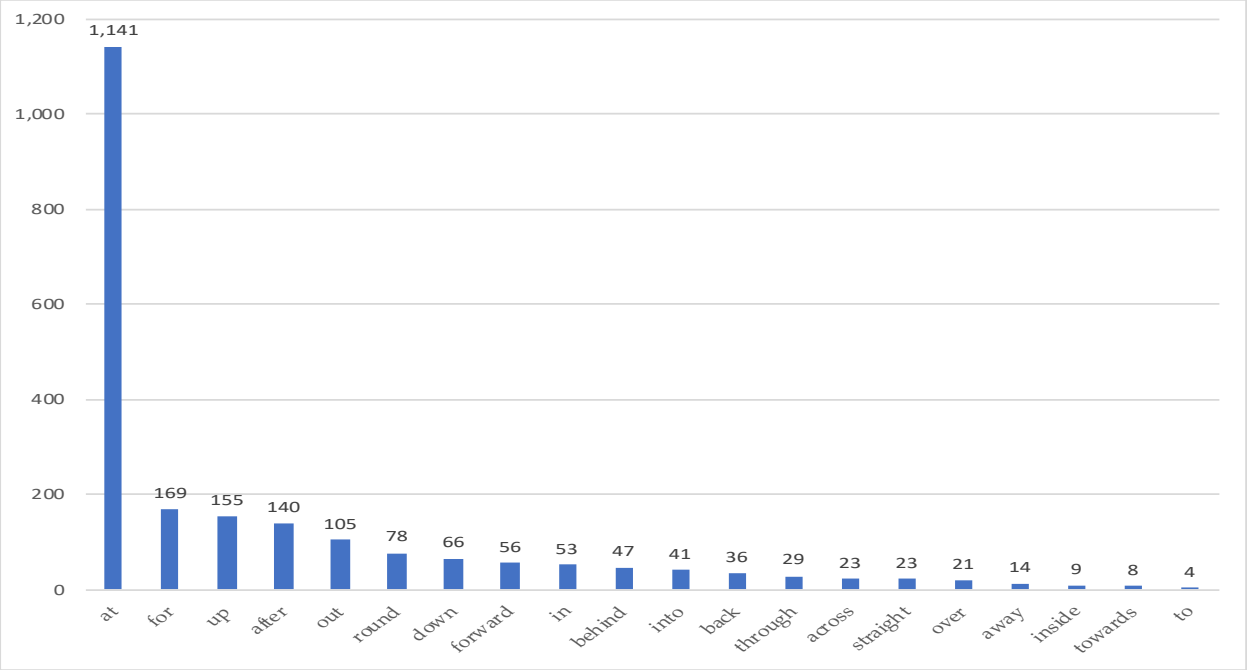

Figure 7. Type and Token frequency of directive in the "look + directive" in the OBW Corpus

a conventional linguistic unit. The type frequency of the derivative noun is 9 including *surprise, wonder, astonishment, amusement, disbelief, disgust, hate, silence, horror*. While the token frequency of *surprise* is highest as a total from stages 1 to 6, the token frequency of the other derivative nouns is only once or twice ex-

look at X + in + derivative noun

Table 1 shows that "look at X" is used with a pivot schema "in + derivative noun" as

Table 1. Instantiations of "look at X + in + derivative noun" and the token frequency

	1	2	3	4	5	6	Token Frequency
look at X in surprise	1	1	6	1	1	8	18
look at X in angry surprise				1			1
look down in surprise at X			1				1
look at X in wonder						10	10
look at X in astonishment						1	1
look at X in amusement					1	1	2
look at X in disbelief						1	1
look at X in disgust						1	1
look at X in hate		1					1
look at X in silence			2				2
look in horror at X				1			1

look at X + with + (adjective) + interest

Table 2 shows that "look at X" is used with a pivot schema "with + (adjective) + interest" as a conventional linguistic unit. The type frequency of the adjective is 4 such as *more, new, polite,* and *great*. The token frequency of the each "with + (adjective) + interest" at one stage is at most twice even if learners read the 10 books at stage 6.

Table 2. Instantiations of "look at X + with + (adjective) + interest" and the token frequency

	1	2	3	4	5	6	Token Frequency
look at X with interest	1				1	2	4
look at X with more interest		1			1	2	4
look at X with new interest			1		1	2	4
look at X with polite interest			1		1	2	4
look with interest at X		1			1	2	4
look with great interest at X			1		1	2	4

look at X + with + adjective + eyes

Table 3 shows that "look at X" is used with a pivot schema "with + adjective + eyes" as a conventional linguistic unit. The type frequency of the adjective is 11, including *beautiful, blue, big, cold, clear, dreamy, desperate, honest, round, sad,* and *thoughtful*. The token frequency of the each "with + adjective + eyes" in the 60 books is once or twice.

Table 3. Instantiations of "look at X + with + adjective + eyes" and the token frequency

	1	2	3	4	5	6	Token Frequency
look at X sadly with those beautiful blue eyes	1						1
look at X those cold eyes			1				1
look at X with one's cold cruel eyes					1	1	2
look at X with dreamy eyes			1				1
look at X with sad eyes					1		1
look at X with big desperate eyes						1	1
look at X with those clear eyes					1		1
look at X one's clear honest eyes						1	1
look with round thoughtful eyes at X					1	1	2

Table 4. Instantiations of "look at X + with[without] + (a[an]) + (adjective) + noun[-ing]" and the token frequency

	1	2	3	4	5	6	Token Frequency
look at X with a smile						1	1
look at X with a big smile		1					1
look at X with an unpleasant confident smile					1		1
look at X with a lifeless expression						1	1
look at X with disapproval						1	1
look at X with suspicion						1	1
look at X with total disgust						1	1
look at X with cold hatred						1	1
look at X with a little frown							
look at X with one's mouth open							
look at X without joy and without hope		1					1
look at X without saying a word			1				1
look at X without saying anything				1			1

look at X + with [without] + (adjective) + noun [-ing]

Table 4 shows that "look at X" is used with a pivot schema "with [without] + (a[an]) + (adjective) + noun [-ing]" as a conventional linguistic unit. The type frequency of the noun is 11, including *smile, expression, disapproval, suspicion, disgust, hatred, frown, mouth, joy, hope, saying*. The token frequency of the each "with [without] + (a[an]) + (adjective) + noun [-ing]" is once even if learners read the 60 books.

The analysis of what other words are conventionally used with "look at X" indicates that the root meaning of "look", to turn your eyes in a particular direction, is modified by those conventional linguistic units which function as adverbial. The strong combination between "look at X" and adverbial is explained by Hills and Lewis (1997) in the following way: "… it is almost impossible to give a general list of adverbs. You can look at almost anything and feel many different emotions about what you see, so the adverb depends on both what you see and how you feel" (p. 255). Despite of the high valency of "look at X + adverbial", no major E-J and E-E dictionaries include the pivot schemas abstracted from the OBW corpus shown in the tables 1 through 4.

Moreover, the prepositions "in" and "with [without]" used with "look at X" are function words, so learners can skip them as far as they can follow the story as West (1960) pointed out:

> When we count prepositions or structural verbs (*Put, Take, Make*) for reading, we find a new and rather interesting phenomenon. Although these words are the major burden in learning to speak a language, in learning to read they are so neutral that they count for relatively little. They have little meaning of their own; they take their meaning from the other words.

> It does not matter in reading whether she died *of, from, by, in*, or *through* child birth; any of these would be equally reasonable. In speech the right one has to be learned and the very fact that, quite arbitrarily and unreasonably. Died *of* cholera, but Died *in* childbirth are correct, makes the learning all the more difficult and all the more liable to error. (p. 48)

This is why the 'catalytic interface' position contrives some ways to have learners pay attention to the prepositions "with" and "in" when they are used with "look at X". In answer to the third research question, EGR practitioners should explicitly teach learners the pivot schemas and some instantiations as conventional linguistic units to facilitate them to notice how "look" is used in the virtuous circle of the good reader.

Limitations and further research

The conventional linguistic units shown in the tables 1 though 4 are based on the OBW corpus constructed for this study. The type frequency and token frequency will be different if other books of the OBW series are chosen. It is likely that the more books the OBW corpus has, the higher the type frequency will be. In order to comprehensively perceive the pedagogical and graded features of the English from stages 1 to 6, the OBW corpus should include more books for each stage.

This study explored how "look at X" is used in the OBW corpus. There are variety of directives in figure 7 which are combined with "look". We need to explore other directives about pivot schemas and conventional linguistic units which are worth intentionally learning to more fully appreciate the stories of the OBW series. Needless to say, we need to evaluate the effect of the intentional learning for incidental learning in EGR.

Furthermore, we need to investigate the uses of other words of the first 1000 words in the GSL list which cover 78.2% on average of every stage of the OBW corpus. Based on the analysis, we can explore what EGR practitioners should explicitly teach to facilitate incidental learning of conventional linguistic units in the virtuous circle of the good reader.

Conclusion

The results of the present study show that we can abstract a pivot schema "look + directive" from the OBW corpus and the type frequency of the directive is high. As an example of the directive, we explored how "look at X" is used. We could abstract several pivot schemas including "look at X" from the OBW corpus. However, the token frequency of the instantiations as conventional linguistic units was low even if the 60 books from stages 1 to 6 are read. The low token frequency implies that EGR cannot quantitatively provide enough opportunities for learners to acquire conventional linguistic units. In conclusion, EGR practitioners need to explicitly teach them and come up with some ways to facilitate learners to pay more attention to them in the contexts of stories, and effectively entrench them in memory.

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