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## A Vocabulary Deep Dive into the National Geographic Textbook *Reading Explorer 4*

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### Abstract

This brief report investigates the vocabulary used in the 24 articles of National Geographic's *Reading Explorer 4* textbook and compares them according to the CEFR and ACTFL frameworks whilst examining words featured in each chapter's highlighted vocabulary list. The purpose is to juxtapose the stated purpose of a textbook and its utility in an intensive English program's intermediate high reading class. A lexical analysis showed that while the chapter word lists feature advanced vocabulary, they only average 20% of AWL words. Articles cover 57% of the AWL in the book but with little repetition, and the articles in each chapter do not increase in difficulty. A pedagogical discussion follows as to how teachers can supplement and support the vocabulary needs of their students.

**Keywords:** *vocabulary, AWL, ACTFL, CEFR, Reading Explorer*

### Introduction

Reading teachers, particularly those new in the English as a second language (ESL) profession, may adopt a particular reading textbook assuming it is a good match for student learning because publishers advertise it as such. If not critically examined, teachers may assume that a textbook would recycle important academic words, introduce increasingly difficult vocabulary in each successive chapter, and would align with established performance proficiency benchmarks from organizations such as the Common European Framework of Reference for Languages (CEFR) or the American Council on the Teaching of Foreign Languages (ACTFL). While these assumptions might be correct, the alignment between textbooks and students needs is often not so straightforward. This brief report illustrates the lexical alignment analysis one teacher performed who adopted National Geographic's *Reading Explorer 4* textbook for a mid-intermediate ESL course.

## Background

A major goal of reading teachers in English language instruction courses is to assist students in improving their reading ability and vocabulary knowledge. University professors report that reading skills are more necessary than writing or speaking skills in college (Hartshorn et al., 2017, 2019), and vocabulary researchers emphasize the need for students to develop a working knowledge of 95% of words in order to comprehend the text (Gardner, 2013). While extensive reading is one way to foster reading development and vocabulary exposure, Grabe (2009) argues that language development courses should provide practice in both learning to read and reading to learn. Preparatory materials which are not appropriately selected can result in learner frustration that can lead to student failure (Lynn, 2021). Thus it is critical to understand the appropriateness of texts prior to adopting them. One measure of appropriateness is the alignment of the vocabulary with an established list. In this sense, it is the connection between students' vocabulary needs and the vocabulary presented in course reading materials.

## Vocabulary Needs

The *English Profile* program within the CEFR identifies lexical items that learners should know at each of the six CEFR levels (Cambridge, n.d.). The six levels are A1, A2, B1, B2, C1, and C2, and they represent levels of proficiency which will be discussed in more detail in the Methods section below. The CEFR B1 level manual explains that the CEFR is not in favor of teaching specific vocabulary but instead prepares learners for benchmark workplace or social capabilities (Van Ek & Trim, 1998). Schools, publishers, and assessors in the United States tend to draw from the Academic Word List (AWL) (<https://www.wgtn.ac.nz/lals/resources/academicwordlist>) which contains 570 word families that are not on the General Service List and make up 10% of the vocabulary used in academic texts (Coxhead, 2000). Because ACTFL does not suggest or propose any leveling of vocabulary, the AWL has become the de facto vocabulary teaching plan for students preparing for academic exams.

In order to demonstrate vocabulary alignment, a reading textbook should introduce vocabulary consistent with CEFR or AWL vocabulary levels. That is, lexical items that are more common (i.e., more frequently used) in English should be

introduced before items that are less common. For example, A1 vocabulary items should be introduced before A2, B1, B2, and so forth. Similarly, lexical items on the first of the 10 sublists of the AWL should be introduced before items on list 2 and so forth. Ideally texts within a textbook should move from more to less common vocabulary as the book progresses. Vocabulary alignment can be measured by comparing the lexis in reading texts to the established CEFR and AWL lists as well as general frequency lists of English words to determine whether vocabulary becomes increasingly difficult (i.e., less common) as the textbook progresses. This study examined vocabulary alignment of *Reading Explorer 4* by asking the following research questions:

1. To what extent do the articles in *Reading Explorer 4* introduce increasingly more difficult vocabulary?
2. To what extent do the articles and highlighted vocabulary lists in *Reading Explorer 4* cover and recycle words on the AWL?
3. To what extent do the AWL words correspond to the CEFR level ratings of vocabulary words in the articles?

## Methods

### Materials

The material used in this analysis were the *Reading Explorer 4* textbook, which is the fifth book in a six-book series designed within the Common European Framework of Reference for Languages (CEFR). It is comprised of 24 real-world articles as well as 20 lists of key vocabulary to assist with readings. The book has a level rating of B2/C1 - intermediate high. At the B2 level a learner “can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialisation” and at C1 a learner “can understand a wide range of demanding, longer texts, and recognise implicit meaning” (Cambridge, 2013, p. 5). This is comparable to the ACTFL standards for intermediate high which state that a learner “can usually follow the main message in various time frames in straightforward, and sometimes descriptive, paragraph length informational [and fictional] texts” (NCSSFL-ACTFL, 2017b, p. 2) and at advanced low a learner “can identify the underlying message and some supporting details across major time frames in descriptive informational

[and fictional] texts” (NCSSFL-ACTFL, 2017a, p. 2). Both frameworks seem to agree on learners being able to comprehend the main idea, details, and some implicit meanings found in fictional and nonfictional texts of varying lengths.

### Procedure

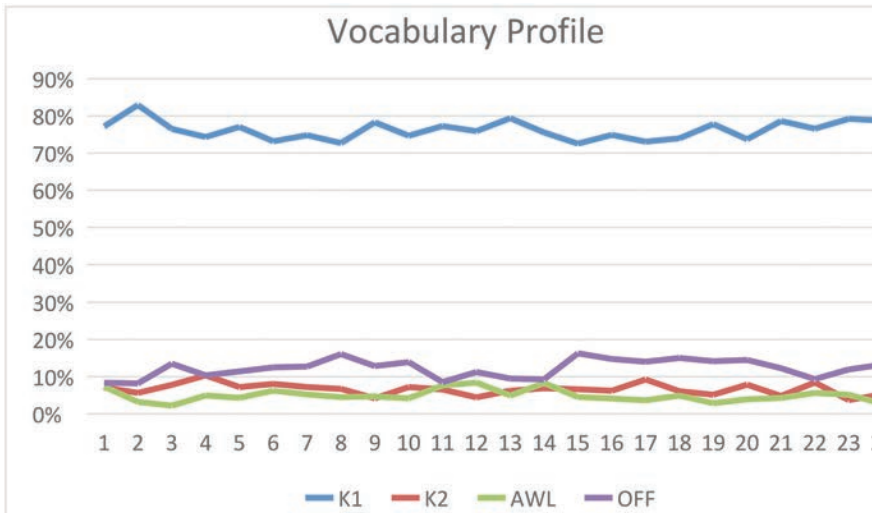
Each of the 24 articles were converted to text files and run through the Web VP Classic program on LexTutor.ca. The percentages were calculated for the first and second 1000 words of English, the AWL, and off-list words in the article. Then each file was run through the Profiler on VocabKitchen.com to calculate the CEFR vocabulary level ratings and percentages for each word level. The same process was performed for the 20 highlighted vocabulary word lists for each chapter in the book. All the articles were run in the Range and Compleat Web VP programs to get a complete look at which AWL words were included and the frequency of occurrence. A list was compiled with each of the 570 AWL words, their sublist, CEFR level rating, and frequency in the textbook.

## Results

### Vocabulary Progression

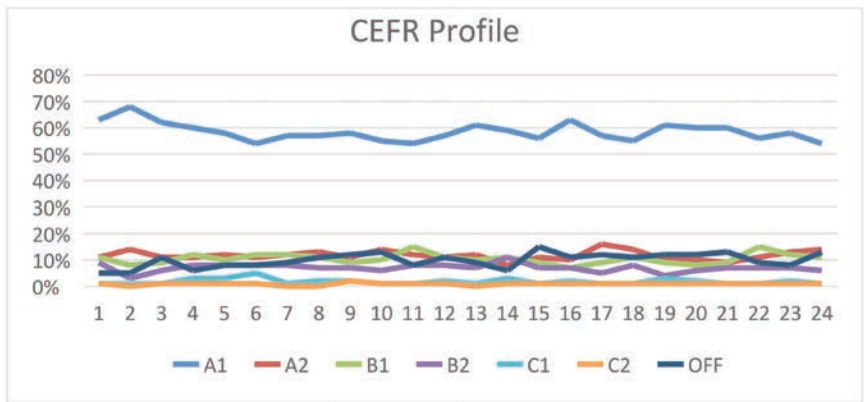
The first research question asked whether *Reading Explorer 4* introduced increasingly more difficult vocabulary as the book progressed. Results in Figures 1 and 2 show that the articles all used approximately the same percentage of each level of words from the various profiles without any substantial change from article to article. In fact, as seen in Figure 1 the very first article, labeled as 1, contained 7% AWL words while the last article, labeled as 24, only contained 3%. There are 12 chapters with 2 readings per chapter in the book. We expected to see the difficulty increase with each reading, but as can be seen in Figures 1 and 2, that is not the case. Conversely, as seen in Figure 2, the first article contained 63% A1 words on the CEFR profile compared to 58% on the final article and an increase of 8% from off-list words, indicating an increase in vocabulary difficulty; however, there was no change in C1 or C2 word percentages indicating that the change was mostly due to uncommon or off-list words appearing in the final article.

**Figure 1.** Percent of words in each article appearing on various lists according to Vocabulary profile



Note. K1 = the 1000 most frequent words in English according to the BNC COCA; K2 = the second most common thousand words in English; AWL = Academic Word List; OFF = all words not appearing on the K1, K2, or AWL lists. 1 through 24 = readings in the National Geographic text corresponding to two passages per chapter (e.g., 1 and 2 = first and second reading in chapter 1).

**Figure 2.** Percent of words in each article according to CEFR profile



Note. A1 - C2 = CEFR proficiency bands (Cambridge University Press, n.d.)

**Coverage of AWL**

The second research question asked to what extent the articles and highlighted vocabulary lists in *Reading Explorer 4* covered and recycled words on the AWL. Results showed that the words from the articles in the *Reading Explorer 4* textbook covered 57% of the AWL. However, frequency data from the Range program showed that AWL words had limited recycling in successive chapters: only 25% of AWL words were used in more than one article (Appendix A shows a breakdown of repeated AWL words). Academic words were not introduced based on frequency as every article contained words from sublists 1-9. Moreover, only 60 of the 240 items on the highlighted vocabulary lists came from the AWL, covering only 10% of the list. On average 4 of the 20 words from each chapter came from the AWL and none were repeated. In contrast, nearly all the highlighted words came from levels B2-C2 of the CEFR.

**AWL Overlap with CEFR**

The final research question asked whether the AWL words correspond to CEFR level vocabulary words in the articles. Results showed that the CEFR and AWL sublists overlapped inasmuch as nearly all AWL words (90%) were included in a CEFR level from A1-C2. Further, the CEFR levels sampled from the AWL sublists in a roughly linear pattern where lower CEFR lists also sampled from

lower AWL sublists as illustrated in Table 1. The majority of AWL words used in *Reading Explorer 4* (52%) were also B2 words, indicating that vocabulary used in the text largely corresponded to the language level of target learners.

**Table 1.** AWL word type by CEFR level

CEFR List	AWL Sublists									
	1	2	3	4	5	6	7	8	9	10
A1	0	2	0	1	0	0	0	0	0	0
A2	2	3	2	2	2	1	2	2	1	2
B1	17	12	12	17	5	12	17	8	6	2
B2	33	31	26	19	29	18	33	16	13	6
C1	7	7	9	11	14	16	7	15	18	6
C2	0	1	5	6	5	6	0	9	13	10
Off	1	3	6	4	5	6	5	1	8	4

Conclusion

This analysis of *Reading Explorer 4* showed that articles did not use increasingly difficult words as the book progressed. This is especially true for AWL words which seemed to be chosen at random, highlighted capriciously throughout the text, and introduced only once. CEFR vocabulary levels demonstrated a very slight increase in difficulty as the book progressed, but that increase in difficulty was related to the inclusion of off-list vocabulary rather than higher levels of C1 or C2 lexical items.

The lack of alignment of vocabulary with AWL and CEFR lists in *Reading Explorer 4* has pros and cons. The cons include the fact that the book does not offer a progressive lexical challenge to students, so those who study from it will not necessarily be aided in developing increasing academic vocabulary. Moreover, it is unusual for teachers to cover every chapter of a textbook in a semester, so exposure to academic words may be limited by this factor. Also, the academic words are not repeated from article to article leaving little chance for repetition or spaced retrieval. Students would need supplementation by the teacher to get repeated practice with academic words. On the other hand, a benefit is that students can read articles out of order and according to their interest without affecting the progression of the book. Additionally, the featured words in each chapter are ad-

vanced vocabulary and bring a real world context that is interesting for students and may lead to increased sensitization and comprehension of these items. Readers will nonetheless be exposed to a variety of B2 vocabulary words, which aligns with the CEFR orientation of the text.

The vocabulary analysis revealed that *Reading Explorer 4* was not focused on the repetition of AWL words, but it was concerned with introducing level appropriate words that would help learners to understand the main idea and determine implicit meaning from text. Knowing this, teachers can add their own academic vocabulary word activities to encourage vocabulary progress for different purposes such as preparing students for academic writing or testing in non-European contexts.

The analysis in this study further demonstrates one simple and inexpensive way for teachers to analyze and understand the vocabulary coverage of textbooks they adopt. Teachers can enter electronic text into analyzers on websites such as LexTutor.ca and VocabKitchen.com to quickly evaluate vocabulary alignment across chapters in a book or between books they are considering adopting. In addition to the websites used in this analysis, other analysis tools such as wordandphrase.info, which creates frequency-based word lists and uses the Corpus of Contemporary American English as its underlying source, can allow both students and teachers to examine vocabulary coverage and conduct further in-depth collocation and meaning searches of individual words and phrases.

Although the specific findings related to vocabulary alignment of *Reading Explorer 4* are not generalizable to other ESL textbooks, the principles of vocabulary analysis are. Further investigations should be conducted on textbooks in this and other series. Hopefully the process and findings in this study will inspire teachers in their own textbook analyses.

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Appendix A

AWL words appearing in more than one article and percentage from each sublist of the AWL. Numbers in parentheses indicate the number of articles in which each word appeared.

1	2	3	4	5	6	7	8
7.4%	6.1%	5.1%	3.3%	5.3%	3.3%	4.6%	2.6%
Area (13)	Compute (6)	Technology (9)	Investigate (5)	Challenge (7)	Reveal (10)	Globe (9)	Detect (5)
Create (9)	Tradition (6)	Physical (7)	Job (3)	Generation (6)	Expert (7)	Survive (5)	Eventual (5)
Evident (9)	Comple X(6)	Locate (6)	Predict (3)	Image (5)	Transform (5)	Decade (5)	Drama (5)
Process (8)	Region (5)	Link (5)	Code (3)	Alter (5)	Display (4)	Innovate (4)	Vehicle (3)
Percent (8)	Potential (5)	Technique (4)	Apparent (2)	Expand (5)	Transport (4)	Visible (4)	Currency (2)
Identify (8)	Conclude (5)	Layer (4)	Stress (5)	Enable (5)	Motive (3)	Confirm (4)	Intense (2)
Analyse (7)	Affect (5)	Alternative (4)	Emerge (2)	Evolve (4)	Migrate (2)	Equip (4)	Manipulate (2)
Occur (7)	Community (5)	Remove (4)	Commit (2)	Network (4)	Cooperate (2)	Chemical (3)	
Indicate (7)	Design (4)	Convene (3)	Undertake (2)	Monitor (4)	Diverse (2)	Isolate (3)	9
Research (6)	Transfer (4)	Document (3)		Energy (4)		Ultimate (3)	2.3%
Issue (6)	Culture (4)	Rely (3)		Modify (3)		Release (3)	Team (5)
Estimate (6)	Focus (4)	Shift (3)		Transit (2)		Media (2)	Device (3)
Data (6)	Site (4)	Fund (3)		Medical (2)		Insert (2)	Military (2)
Environment (5)	Consume (3)	Core (2)		Stable (2)		Couple (2)	Revolution (2)
Individual (5)	Credit (3)	Instance (2)		Symbol (2)		Reverse (2)	Analogy (2)
Legal (5)	Final (3)	Publish (2)		Aware (2)		Identical (2)	Bulk (2)
Economy (4)	Strategy (3)	Comment (2)		Conflict (2)			
Structure (4)	Impact (3)	React (2)		Contact (2)			10
Theory (4)	Range (3)	Sufficient (2)		Expose (2)			0.9%
Factor (4)	Invest (2)			Target (2)			Colleague (5)
Method (4)	Aspect (2)						Convince (3)

1	2	3	4	5	6	7	8
Source (4)	Secure (2)						
Involve (4)	Achieve (2)						
Period (4)	Construct (2)						
Require (4)	Resource (2)						
Specific (4)							
Finance (3)							
Major (3)							
Respond (3)							
Role (3)							
Function (2)							
Preceed (2)							