



## A Readability Analysis of Japanese English Text Books

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### Abstract

Japanese government sets "Course of Study" for the secondary schools to follow and revise it every ten years or so. All the English textbooks used in the secondary schools must be based on the Course of Study and need to pass the evaluation by the committee the Ministry of Education sets. Various English textbooks are available suit to the various proficiency levels of students. However, there have been no generalized scales to differentiate the levels of each textbook. "Ozasa-Fukui Year Level" was created to analyze such differentiation according to the current Course of Study. In 2008, a new revision of Course of Study appeared and all the textbooks have been revised accordingly. The main points of revision of English textbooks for Junior high schools were that the number of words increased from 900 to 1200, and the limitation of grammatical rules was taken out. In order to study the difference among the newly revised textbooks, I used "Ozasa-Fukui Year Level," in which the comparisons were made not only among the newly revised textbooks but also between the newly revised textbooks and the old textbooks. I used three textbooks for Junior high schools (year 7 to 9), Sunshine, New Crown, and New Horizon, well-used textbooks in many schools. I used "Ozasa-Fukui Year Level" to analyze each lesson (there are normally 10 lessons in each textbook) to see the level of each lesson. The results showed that New Horizon had the highest year levels in average, New Horizon came second and Sunshine third. They also showed that the difficulty level (year level) does not follow the level of previous Course of Study and the difficulty level of each book does not increase steadily but has many ups and downs. From these findings I concluded that newly revised textbooks are not necessarily made to follow the readability level of previous Course of Study, but are more of communicative-centered textbooks.

### 1. Introduction

#### 1.1 English textbooks for the secondary schools in Japan

Japanese government sets "Course of Study" for the secondary schools to follow and revise it every ten years or so. All the English textbooks used in the secondary schools must be based on Course of Study and need to pass the evaluation by the committee the Ministry of Education sets. Various English textbooks approved by the committee are available to suit the various proficiency levels of students.

#### 1.2 Aim of this paper

In 2008, a new revision of Course of Study appeared and all the textbooks have been revised accordingly. The main points in revision of English textbooks for Junior high schools are as follows: the number of words was increased from 900 to 1200, the limitation of grammatical rules was taken out, and the focus was more on communication [1].

The textbook publishing companies publish various English textbooks to suit students with lower proficiency level as well as those with higher proficiency level with the approval of the evaluation committee. Word has it that because the newly revised Course of Study requires more words and no limit in grammatical rules, the new textbooks are "a lot harder" for students to learn. As much as many English teachers share the same feeling, very few studies have been done to measure the textbooks on their difficulty levels.

The purpose of this study is to measure the textbooks used by many junior high schools on their difficulty levels with readability software, *Ozasa-Fukui Year Level* and to clarify the major differences in the new textbooks. Since this application software is based on the previous Course of Study, the results would show the comparative difference between the new textbooks and the old textbooks. And they would also clarify characteristics of the new textbooks.

#### 1.3 Readability measurement index

Toshiaki Ozasa and Masayasu Fukui developed the readability software in accordance with the Course of Study to measure English textbooks, which is called "Ozasa-Fukui Year Level"[2][3]. With

this software, any English text can be analysed and placed into "year level" based on the Course of Study. Integer numbers in *Ozasa-Fukui Year Level* refer to Year; 1 for junior high school 1<sup>st</sup> year (year 7), 3 for junior high school 3<sup>rd</sup> year (year 9), and 5 for high school 2<sup>nd</sup> year (year 11) and so on. And first digit decimal numbers refer to one of 10 lessons in the year (Each year was divided by 10 lessons). For instance, a sentence like "I read the book" is measured as 1.30 year level, which means this sentence has the difficulty level of the third lesson in the first year (year 7) of the previous Course of Study based textbooks.

*Ozasa-Fukui Year Level* is based on four variables: length of sentence, length of word, difficulty level of word, and difficulty level of collocation. Ozasa and Fukui, the creators of this measurement software found that with these variables. Its R-squared figure came out as  $r^2=0.824$ , hence very high coefficient of determination rate [4].

## 2. Readability analysis

Three sets of English textbooks for junior high schools were chosen for the analysis: *Sunshine*, *New Horizon* and *New Crown*, because they were widely used among junior high schools in Japan. Each set contains three books, which are for year 1 (year 7) through year 3 (year 9) of junior high school [5] [6].

### 2.1 Sunshine

As Table 1 shows, Book 1 of *Sunshine* starts out with 1.32 year level and drops down to 0.6 in Lesson 2. The level stays around 1 or lower up to Lesson 6. From Lesson 7 through 10, the level remains around 1. In Lesson 11, the final lesson, the level shots up to 1.56.

Table 1 *Sunshine*

Book 1		Book 2		Book 3	
Lesson	Year Level	Lesson	Year Level	Lesson	Year Level
1	1.32	1	1.56	1	2.07
2	0.60	2	1.27	2	2.28
3	1.04	3	1.62	3	2.18
4	1.16	4	1.75	4	3.73
Reading 1	0.88	5	1.80	5	1.86
5	0.68	6	1.86	6	3.46
6	0.67	7	3.08	7	3.36
7	1.30	8	3.52	8	3.16
8	1.27	9	1.89	9	3.32
9	1.27	10	2.28	10	3.23
Reading 2	1.11	11	2.37	average	2.87
10	1.06	12	3.18		
11	1.56	average	2.18		
average	1.07				

Book 2 of *Sunshine* starts out with 1.56 and stays within year 1 level up to Lesson 6. In Lesson 7 and 8, the level jumps up to over 3.00 level, which refers to 3<sup>rd</sup> year level in the previous Course Study. Between Lesson 9 and 11, it goes down again to 2<sup>nd</sup> year level or even lower (1.89 in L. 9). And in Lesson 12, the final lesson of the book, the level jumps again to 3.18, the 3<sup>rd</sup> year level. Book 3 starts out with the 2<sup>nd</sup> year beginning level, and it shoots up in Lesson 4 to 3.73, which indicates the difficulty level of the latter half of the 3<sup>rd</sup> year. But it drops down to 1.86, the 1<sup>st</sup> year ending level. The level of

the latter half of the book remains to be between 3.5 or below. And the book ends with 3.23 in Lesson 10, the final lesson.

## 2.2 New Horizon

Table 2 shows the results of *New Horizon*.

Table 2 *New Horizon* year level

Book 1		Book 2		Book 3	
Lesson	Year Level	Lesson	Year Level	Lesson	Year Level
1	0.09	warmup	1.38	warmup	2.39
2	0.58	1	1.48	1	2.44
3	0.74	2	1.36	challenge 1	1.96
4	0.78	3	1.7	2	2.69
5	0.73	challenge 1	1.7	3	2.45
6	1.33	Reading 1	3.02	Reading 1	2.38
7	0.84	4	1.38	4	2.39
8	0.58	5	2.24	5	2.29
9	1.04	6	2.51	6	2.69
10	1.75	Reading 2	2.76	challenge 2	3.29
11	1.33	7	1.48	Reading 2	3.06
Reading 1	2.03	challenge 2	3.11	Reading 3	4.15
average	0.99	Reading 3	3.1	average	2.68
		average	2.09		

Book 1 of *New Horizon* starts out with 0.09 in Lesson 1, which means the difficulty level is lower than 1<sup>st</sup> year level of the previous Course of Study based textbooks. And the level remains to be lower up to Lesson 8 with the exception of Lesson 6. Lessons 9 through 11, the level indicates the beginning of the 1<sup>st</sup> year except Lesson 10 (1.75).

Book 2 begins with 1.48 in Lesson 1 and stays within the 1<sup>st</sup> year level until Lesson 4, the middle of the book. Lessons 5 and 6 have the same difficulty level of the previous Course of Study based textbooks, but the last lesson, Lesson 7 has 1.48, the middle level of the 1<sup>st</sup> year.

Throughout Book 3 (from Lesson 1 to Lesson 6) the level stays in the 2<sup>nd</sup> year level. The highest level is that of Lessons 2 and 6, which is 2.69, the difficulty level of the middle 2<sup>nd</sup> year of the previous Course of Study based textbooks, though Book 3 is for 3<sup>rd</sup> year students (year 9).

## 2.3 New Crown

Table 3 shows the results of the analysis. Book 1 starts out with 0 level, which indicates its difficulty level is lower than that of the previous textbooks. 0 level continues until Lesson 8 with the exception of Lesson 7. And overall average of Book 1 is 0.81, lower than that of the previous textbooks. On the other hand, Reading 2 has the difficulty level of 2.24, the level of 2<sup>nd</sup> year in the previous textbooks.

Table 3 New Crown year level

Book 1		Book 2		Book 3	
Lesson	Year Level	Lesson	Year Level	Lesson	Year Level
1	0.14	1	1.22	1	2.44
2	0.32	2	1.62	2	1.38
3	0.59	3	1.54	3	2.06
4	0.51	4	1.58	4	3.02
5	0.23	Reading 1	1.52	Reading 1	4.16
Reading 1	0.52	5	1.74	5	2.26
6	0.73	6	1.74	6	2.42
7	1.14	7	2.32	7	2.23
8	0.74	8	1.34	8	2.12
9	1.06	Reading 2	3.02	Reading 2	2.82
Reading 2	2.24	Reading 3	1.59	Reading 3	2.78
Reading 3	1.55	average	1.75	Reading 4	3.06
average	0.81			average	2.56

Book 2 begins with 1.22 and remains under 2.0 level until the last lesson with the exception of Lesson 7. However, the difficulty level of Reading 2 is 3.02, the 3rd year level in the previous textbooks.

The difficulty level of Book 3 is mostly under 3.0 level. Lesson 2 has 1.38 level. However, Reading 1 has 4.16 level, referring to the difficulty level of year 10 (1st year in high school) of the previous textbooks.

### 3. Results

The results show that in all three sets of textbooks, the difficulty level does not grow steadily. For instance, in *Sunshine* textbooks, average year level for each book is 1.08 (1.5) for Book 1, 2.14 (2.5) for Book 2, and 2.68 (3.5) for Book 3. The figures in brackets indicate the average level of the previous Course of Study based textbooks. All average levels are lower than those of the previous textbooks. These differences show that the newly revised textbooks have lower readability level than those of previous Course of Study based textbooks.

They also show that in all three sets of books, the difficulty level does not grow steadily but it often jumps up or down. Furthermore, some of Readings and Lessons have considerably high difficulty level. For instance, Reading 1 of Book 3 in *New Crown* has 4.16, the level of the 1<sup>st</sup> year in high school. This result shows that the difficulty level of the newly revised textbooks disregards the principle of steady growing.

### 4. Discussion

The findings of the readability analysis with *Ozasa-Fukui Year Level* clearly show that while the number of words used in the textbooks was increased from 900 to 1200, the difficulty level did not grow but seemingly diminished. The detail figures indicate that those lessons with low difficulty levels tend to have less number of collocations.

The fact that difficulty level did not grow steadily in most of the textbooks but often jumps up or down irregularly possibly indicates that each lesson focuses on the content and disregards its difficulty level. The reason probably lies in the objective of the newly devised Course of Study, which is "fostering a positive attitude toward communication through foreign languages [7]." I believe publishers chose the



stories and placed them in any part of the book regardless of their difficulty levels in order to offer important lessons students may learn from them.

Overall, while the newly revised textbooks contain more new words than the previous textbooks, and have more volume (total number of words and sentences), their difficulty levels in average are not as high as the previous textbooks. On the other hand, the fact that some of the Reading sections and lessons showed high figures in difficulty level would refer one of the major points of the revision of *Course of Study*; that it places an emphasis on communicative skills rather than learning grammatical rules.

## 5. Conclusion

The findings of the present study would give objective characteristics of the newly revised Japanese Textbooks based on new Course of Study. The overall year-level of the new textbooks compared to that of the previous textbooks show that their difficulty level is lower than that of the old textbooks. And their difficulty level do not follow the principle of steady growth.

I suggested that the reason may lie on the focal points of new Course of Study: focusing more on communicative skills than the grammatical rules.

However, my suggestion is immature, since it does not have any objective proofs. Thus further studies are needed to verify my suggestion. For instance, by using *Wordsmith*, an application software for text-calculation to find the number of total words in the new textbooks and ratio of new word appearance. And by comparing its results with that of the old textbooks, factors that are contributing in making the difference between the new and old textbooks should emerge.

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