

Scientific English

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Abstract

This study researched the representation of content in Scientific English. To improve representation ability of content in Scientific English need to improve selection ability of optimum words and composition ability of sentences. The reason was showed that Hyper English Dictionary[1] was the most suitable to improve selection ability of optimum words. And the reason was showed that Writing Scientific English[4] by written John Swales was the most suitable to improve composition ability of sentences.

At the same time, this paper was showed useful information for improving capacity of Japanese students by Hyper English Dictionary and Writing Scientific English.

1 Introduction

1.1 Background

In spite of their splendid research results, there are scientific papers with scanty representation ability of content in English. As a result, the splendid research results can not spread enough. Representation ability of content in Scientific English is important when a scientific paper is drawn. The most important ability to represent content of Scientific English are selection ability of optimum words and composition ability of sentences. Noble Scientific English will be realized if selection ability of optimum words and composition ability of sentences are advanced.

1.2 Preceding Research

Hyper English Dictionary is the dictionary developed by Ikebe (those days) / Cai laboratory at University of Tsukuba. And, Hyper English Dictionary can actually use Internet.

URL: hotaru1.is.tsukuba.ac.jp/hidic/hdhome.htm

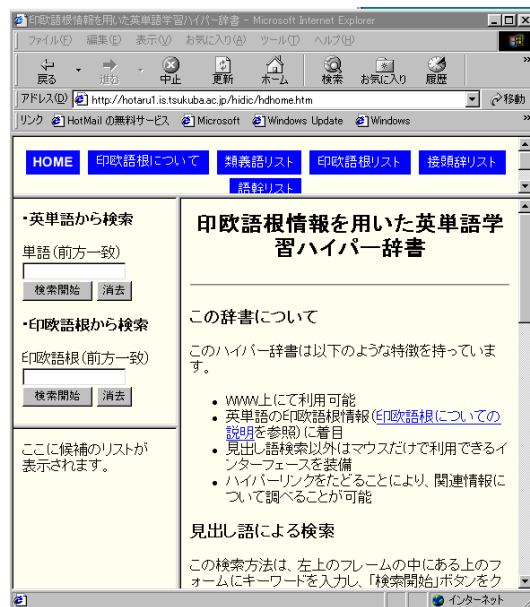


Table 1: Hyper English Dictionary

And, Writing Scientific English has the reputation of the best book to study Scientific English.

1.3 Purpose

This paper shows the most important point when a scientific paper is drawn. It helps to science and engineering students when they draw up scientific paper in English.

2 Representation ability of content in Scientific English

The most important ability to represent content of Scientific English are selection ability of optimum words and composition ability of sentences. This section shows

about selection ability of optimum words and composition ability of sentences.

2.1 Selection ability of optimum words

Hyper English Dictionary was used for selection ability of optimum words.

2.1.1 Hyper English Dictionary

Almost English words are derived from language of the Neolithic Age called Proto-Indo-European. This is common to ancestor language of main 80 national language distributing widely through the European and the Middle and Near East. (See, Table 2). Hyper English Dictionary is rested up and ordered the same sort of language[9,p18].

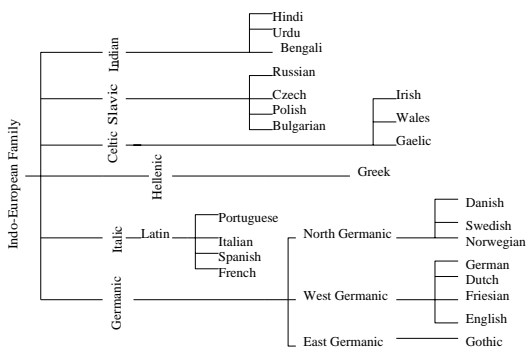


Table 2: Indo-European Family[5,p35]

2.1.2 Comparative study of conventional dictionary, English word book and Hyper English Dictionary

Hyper English Dictionary is a method of learning English word using etymology. In this point, it differs from a conventional dictionary, English word book.

To compare conventional dictionary, English word book with Hyper English Dictionary by English word “heart”.

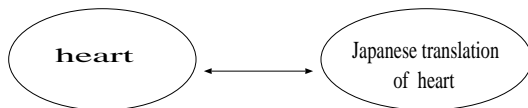


Table 3: Conventional dictionary, English word book

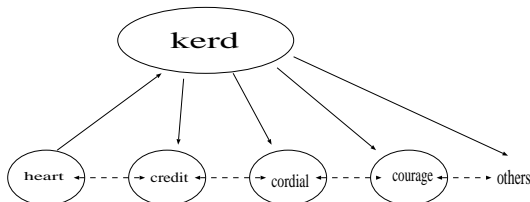


Table 4: Hyper English Dictionary

Conventional dictionary, English word book are relationship only pair by Table 3. But, Hyper English Dictionary is relationship to length (solid line) and side (dotted line) by Table 4.

The etymology (kerd) is traced from the English word (heart). Plural English words (credit, cordial, courage, and so on) are derived from etymology (kerd).

Table 5: Relation of length

Deriving English words (heart, credit, cordial, courage and so on) can not decide meaning agreement, but deriving English words quite similar to meaning.

Table 6: Relation of side

The relation between length and side is definitely difference with conventional dictionary, English word book.

2.1.3 Distinguish of synonym

The synonym of anger and rage was distinguished as similar example. First, anger and rage is pulled by reference of The American Heritage Dictionary of Indo-European Roots SECOND EDITION[2]. Then, the origin of a word is drawn. And the English words listed as a derivative is drawn. If comparison contrast of the meaning of these words is carried out, the synonym of anger and rage can be properly used as a relation of side.

2.1.4 The efficiency of Hyper English Dictionary[1]

About 80 % of present-day English words (about 500,000 words from 450,000 words) are proved roots of Indo-European[6]. Remainder about 20 % of present-day English words are forecasted native original word. Native original word is the words which had been used before the language’s deriving.

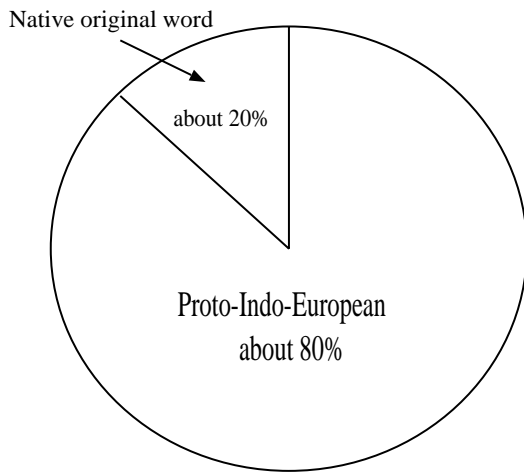


Table 7: The rate of ancestor word

By Table 7, about four words are roots of Indo-European in five words of present-day English words. Hyper English Dictionary can learn surely English word 8,000 words, if Japanese students who studies English hope to learn English word 10,000 words. Hyper English Dictionary can learn English words by length and side relationships in the flow. Therefore, Hyper English Dictionary is more efficient than conventional dictionary, English word book.

2.2 Composition ability of sentences

Writing Scientific English written by John Swales is used in composition ability of sentences. The auxiliary verb which frequency used in Science English was researched to show the feature of Writing Scientific English.

2.2.1 The auxiliary verb

The most used auxiliary verb can be classified into three main groups, and showed in Table 8.

Group 1 : can, may, might, could
Group 2 : will
Group 3 : should, must, have to

Table 8: The most used auxiliary verb[4,p42]

The auxiliary verb of group 1 is often used to describe possibility and probability of realization.

The glass bottle breaks when dropped. (The probability of damage is about 98 ~ 100 %)
The bottle can break when dropped. (The probability of damage is about 40 ~ 70 %)
The bottle may break when dropped. (The probability of damage is about 20 ~ 40 %)
The bottle could/might break when dropped. (The probability of damage is about 5 ~ 20 %)
The bottle cannot break when dropped. (The probability of damage is about 0 ~ 2 %)

Table 9 : Group 1[4,p43]

The auxiliary verb of group 2 is often used to describe the prospect. The example of “will” is described in Table 10.

- I : It describes the action of the sea water on iron.
II: It expects the action of the sea water on iron.

I . The sea-water corrodes the iron.
II. The sea-water will corrode the iron.

Table 10 : Group 2[4,p44]

The most useful auxiliary verb in group 3 is “should”. The word ”should” is often used for warning and order.

Students should be careful when using acids.
Concrete should contain at least 12 % cement.
Boiler pressure should not exceed 300 psi.

Table 11 : Group 3[4,p45]

2.2.2 Feature of Writing Scientific English

The feature of Writing Scientific English is shown by the investigation of 2.2.1.

- A simple, lucid exercise sentence below about 15 words is prepared.
- Everybody can write to correct Scientific English if they write according to the exercise sentences in Writing Scientific English.

Writing Scientific English is not only field of 2.2.1, but also above-mentioned feature was showed for all fields. The feature of Writing Scientific English shows a concrete method with an immediate effect. And the feature of Writing Scientific English is very useful for composition ability of sentences.

3 Result of Investigation

My own TOEIC score is given as an example. I took TOEIC for the first time on September 24, 2000. The TOEIC score were going up by 150 points when I took TOEIC again on December 9, 2000. Hyper English Dictionary and Writing Scientific English waked my interest in English, and it connected with the TOEIC score up.

4 Conclusion

This paper was described that Hyper English Dictionary are the most practical to improve selection ability of optimum words. Hyper English Dictionary enabled me to study a lot of English words used for Scientific English. At once, my ability of vocabulary were improved. And, this paper was described that Writing Scientific English are the most practical to improve composition ability of sentences. Writing Scientific English enabled me to refer a lot of English. At once, my ability of Reading and Writing were improved. The new types of English study methods could be discovered by this study. If this study method is continued, the high score of TOEIC must be able to be obtained.

But, if Japanese students want to improve English, the amount of English study must increase no matter how the quality is good[11].

This study opened up a new English world.

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References

- [1] Cai laboratory at Tsukuba University. (<http://hotaru1.is.tsukuba.ac.jp/hidic/hdhome.htm>)
- [2] C. Watkins, The American Heritage Dictionary of Indo - European Roots SECOND EDITION, HOUGHTON MIFFLIN COMPANY, 2000.
- [3] G. H. Mills and J. A. Walter, Technical Writing FIFTH EDITION, Holt Rinehart Winston, 1986.
- [4] J. Swales, Writing Scientific English, Nikkei Science, 1996 (Japanese translation).
- [5] S. Serizawa, The outline of English (eigonorinkaku), Kaitakusha, 1992 (in Japanese).
- [6] S. Yoshimura, "A study about the hyper-dictionary used Indo-European roots information", Master's thesis in the department of Science and Engineering at University of Tsukuba, 1997 (in Japanese).
- [7] T. Nakao, History of English (eigonrekishi), Koudanshagendaishinsho, 1997 (in Japanese).
- [8] T. Nakao and M. Terashima, An Illustrated History of English, Taishuukanshoten, 1990 (in Japanese).
- [9] Y. Ikebe, How to write a Good Technical English, J.IEICE, vol.80, No.1 '97, pp.14-19 (in Japanese).
- [10] Y. Ikebe, "Kagakueigo ni tuyokunaru", Kodansha, 1991 (in Japanese).
- [11] Y. Saitou, Masters of English (eigotatsujinretsuden), chukoshinsho, 2000 (in Japanese).