

## 科学研究費助成事業 研究成果報告書

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研究課題名(和文)学習者のPredictabilityを応用した英文速読精読Web教材開発

研究課題名(英文)Extensive and Intensive Reading in English with Learners' Predictability

研究代表者

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研究成果の概要(和文)：インターネット上で、全く新しい読解教材が開発され、授業に劇的な変化を与えた。194名の学生が、この読解教材を全て修了した。彼らはTOEIC-IP(満点990点)を事前テストとして、この授業が始まる直前に受験し、再度、授業後の事後テストとして翌年の同じ時期に受験した。この教材を修了した194名の事前テストと事後テストにおける、差の平均値は73.5ポイントであった。一方、教材を利用していないグループでは、彼らの事前テストと事後テストの差の平均値は65.3ポイントであった。

研究成果の学術的意義や社会的意義

授業で英語の多読は、よく取り込まれている。しかし、多読を通して学生は、「どれだけ新しい語彙が身についたのか」、「どれだけ新しい語法が『正確に』身についたのか」、また、「どれだけ内容を『正確に』把握できたのか」、このような疑問をファシリテーターは抱えたまま、学生に英語の多読を任せていた。これらの問題を解決するために、この教材では、インターネット上で、まず多読教材による内容把握問題があり、その後、学生が正確に語彙や語法を身につけるため、多読と同じ教材を利用して段階的に精読ができるように開発されている。

研究成果の概要(英文)：A new reading material has been developed on the World Wide Web, and changed dramatically in class. 194 students finished this reading material. They took the TOEIC-IP by Educational Testing Service twice as the pretest in April, 2016 and the posttest in April, 2017. Each student's result shows their average, which is 73.5 points higher than the pretest. On the other hand, there is another group without learning through this reading material. They took the same standardized test twice in April, 2015 and 2016. Their average score is 65.3 points higher than the pretest.

研究分野：英語教育学、第二言語習得、応用言語学

キーワード：Teaching English CAI on WWW Extensive Reading Intensive Reading 自学自習 TOEIC対策 Japanese Learners 第二言語習得

## 様式 C-19、F-19-1、Z-19、CK-19（共通）

### 1. 研究開始当初の背景

1980年代以降、Nunan 他が提唱する CLT (Communicative Language Teaching) が定着しつつあり学習者にとって実用的な英語運用能力を習得できる機会が増え、さらに経済界では「英語が使える日本人」の育成を高等教育機関に求めている。しかしながら、学習者の英語学習への態度は積極的とは言えず、その理由のひとつに、「欧米人学習者に比べて、日本人学習者のものの観方および考え方(文章の読み方、話の聞き方)が受動的である」のが問題ではないかと考えた。ここで言う受動的とは、「英文を読み、英語を聞く際に、自分の問題意識が伴っていない」ということである。この問題を解決すべく、下記①-2. に記した Predictable Input/Output の着想にいたり、2000 年以來、その実践と効果を研究している。Predictable Input/Output とは、次の Input を積極的に予想する、つまり相手の次の Output への意識を高めることにより、受動的になりがちな学習者の Input への意識を高めるものである。「次に何が書いているのだろうか?」、「次に相手が何を言うのだろうか?」と、学習者が次に与えられる Input に積極的にいかかわろうとすることで、受動的になりがちな Input を積極的に受け取ることを可能にする従来にないアイデアである。

### 2. 研究の目的

本研究の目的は、この Predictable Input/Output の概念に基づく英語教育プログラムをコンピュータのオンライン上に開発し、その有効性を実証することである。また、英語教育プログラムをオンライン化することで、家庭学習が容易となり、教育現場が抱える「学生の学力差」を少しでも埋めていきたいと願っている。

現在、研究代表者・金澤が開発している Predictable Input/Output を応用した Web 教材の効果は、TOEIC-IP テストにおいてここ数年にわたり実証されている。金澤が担当した奈良高専全 4 年生(約 180 名)の平均点で 1 年前より最大 38 点以上(最低でも 33 点以上) 向上し、過去 2 年間の各学生の成績の上昇を観てみると、前年比で最大 265 点以上(低い年度でも 240 点以上) も向上した。実際、受験生の中にはリスニングテストが始まった段階で寝ているものも数人見られるが、このような学生も含めたうえでの上記平均点である。

平成 27 年度から 29 年度までの目標は、本研究の有効性を納得させ得るだけの材料をコンピュータ上に作り出すことである。具体的には、いままで研究を行ってきた Predictable Input/Output に基づく英語教育教材をコンピュータ上に開発し、それを授業および家庭で実践することである。これにより、学生が日々英語に触れる時間がコンピュータ上に残り、学内で行われる TOEIC-IP テストを基準に具体的な英語力の効果検証を測る。

### 3. 研究の方法

本研究の研究計画・方法の概要は、

- (1) 平成 26 年 4 月本校 3 年生以上の学生対象に行われた TOEIC IP Test データと平成 27 年 4 月に行われる TOEIC IP Test データとの比較・分析
  - (2) “Predictable Input/Output” を応用したマルチメディア Reading 学習プログラムの研究開発、および授業での実践、Web 教材(自学自習システム)と授業との融合
  - (3) 年間の授業モジュールの開発(年間 30~35 回分)
  - (4) 毎年 4 月に実施される TOEIC IP Test データを収集し、前年度のデータとの比較・分析を行い、「授業時間外での自習」を授業での評価に加えることによる対時間効果の有効性を実証
  - (5) 学習者の自主性を促し、学習意欲を高める為にゲーム性を加える。
- 以上の手順(2)~(5)に関しては、毎年繰り返し行われる。これにより得られたフィードバックによって、Web 教材を一斉授業と融合したより良い「ハイブリッド教育プログラム」が完成する。

### 4. 研究成果

National Institute of Technology (KOSEN), Nara College (NITNC) holds the standardized test, TOEIC IP (Institutional Program) in April every year. The examinees are from the third graders (Grade 12) through the fifth graders (college sophomore level). This test is mandatory for over 550 students at NITNC every year.

The differences on each annual chart shows the range of the Listening average (Avg) score differences between 39.4 in 2016-2015 and 44.6 in 2017-2016. The Reading average score differences are between 25.9 in 2016-2015 and 28.9 in 2017-2016. The minimal average Total score differences demonstrate 65.3 in 2016-2015, and the maximal average Total score difference is 73.5 in 2017-2016. All field of the maximal scores centered in 2017-2016. What has been different and effective for the school year of 2016 is shown.

It is obvious that the epoch-making reading material has been introduced and provided in the school year of 2016, and it makes the students' scores maximized. There are three stages on this reading material system. At first, students extensively read the articles in English on the internet. Next, they intensively read and learn the content of the same article. Finally, they have to answer four questions of each article. If they made a mistake on each question, it means they had not read and learned it enough, so they have to get back, intensively read and learn it again automatically. When they read

and learn it, some incentive is set up for the students on the system. If they click some words and parts on the article, they will get some coins.

The students extensively read the article in English and show their understanding to answer the question in 60 seconds. You click and choose your answer anytime in 60 seconds. The multiple choices are randomly arranged out of 4 choices, so you cannot cheat it. When you push the enter, you will see whether your answer is correct or not. When you get the correct answer, you will get 10 coins here.

Even though you make a mistake on the Intensive Reading Part 1, the program goes on to the Part 2. On this stage, you dig and collect the coins somewhere. When you repeat and listen to the whole sentences, you will get one coin up to 4 times. If you want to check the whole meaning of the article, you will click "Japanese Audio Icon" and learn what the article meaning not perfectly, but briefly. This program persistently makes the students learn English through the interlanguage, without the perfect translation in Japanese. When you put the cursor on some words, you will see the "㊦" as "Information Icon." When you click it, you will see the pop-up and get some further information about "fog" here. You click the "Information Icon" to get one coin. When you luckily see "Further Information Icon," you can open it and you see the more information. You will also get another coin there. Here is the derivative and its usage, but another is about the cultural background of the word, the history of the word and so on.

After you got coins as much as possible on the Intensive Reading, you click "Enter" and go on to the next stage, "Question 1." These 4 questions ask you about the content of the article, so you choose the correct answer; otherwise you have to get back to the Intensive Reading Part 2 again to learn it enough. When you make a mistake on each question, you have to get back to the Intensive Reading again and again to learn it enough.

22 Konan University students used this reading program in 2016. According to Kanazawa & Konishi's article (2016), 95.4% of the students will recommend this program to other students. 86.4% have developed their reading ability with this program. 86.4% have developed their listening ability, 68.2% have improved their vocabulary with it, and 45.5% have developed their speaking ability. On the other hand, only 22.7% have improved their grammatical knowledge. Only 27.3% have improved their general English skills. The weak points on this reading material have been found with this questionnaire. Furthermore, 22 Konan University students were chosen, because they definitely needed English ability in a short time before studying abroad.

The best score differences of TOEIC between the pretest in 2016 and the posttest in 2017 are shown in all fields such as Listening, Reading and Total scores at NITNC, comparing the gaps among the pretests of the Grade 12 students and the posttests of the freshmen from 2015 to 2017. The introduction of the new reading material system on the internet has been so successful, because this is the only difference in three years. This reading system is very much different from any previous extensive reading and intensive reading. Extensive reading is very popular, but it is very much limited to feel English language out of school in Japan. When you are in the US or UK, you feel English everywhere out of school, so you have so many times to feel and guess the meaning of unknown words. Moreover, it is very easy that interlanguage between English and your mother tongue happens more than the Japanese. It is very anxious for some facilitators in Japan to recommend students to read something without dictionary under the circumstances. The facilitators in Japan have too limited time, but have been still looking for the effective and efficient way to make students learn English for their bright future. It is also difficult for facilitators to maintain their motivation higher to learn English on intensive reading, because students' language levels and learning speeds are too diverse in class. Some feel it too boring and some find it too difficult in class. This reading system has originally resolved all problems with making the paper based reading materials turn into the considered web contents efficient and effective for students with limited time. Besides, this system makes learners' learning attitude active and positive to dig into further information of English words with coins.

It was very obvious that the correlation coefficients were too low between the students' learning seconds and the differences as TOEIC pretest in 2016 and posttest in 2017. They have to be more or less forced and finish all contents, because of their own grades. However, the TOEIC score differences between pretest in 2016 and posttest in 2017 are obvious that this reading system works well for the students in a limited time. Moreover, the students at Konan University show their satisfaction on this reading system. They feel this system is efficient and effective, and would like to recommend other students to learn English with this system.

To the next phase, this system will be edited again to resolve some weak points as the general English learning system with richer grammatical explanations and training to make the students try to speak in English with some contrivances. The new system will motivate students to learn English more in class, at home and anywhere. The more English students study, the more opportunities they receive to make their own future prospective and successful.

April 2016				April 2017				April 2017-2016			
n=115	Listening	Reading	Total	n=115	Listening	Reading	Total	n=115	Listening	Reading	Total
Max	465	360	800	Max	470	400	870	Max	180	145	325
Min	105	55	180	Min	105	55	225	Min	-35	-60	5
Avg	197.7	138.5	336.1	Avg	242.3	167.3	409.6	Avg	44.6	28.9	73.5
SD	60.6	51.1	106.6	SD	68.4	65.6	124.2	SD	40.8	40.5	57.6

  

April 2015				April 2016				April 2016-2015			
n=114	Listening	Reading	Total	n=114	Listening	Reading	Total	n=114	Listening	Reading	Total
Max	380	365	740	Max	415	410	810	Max	150	120	210
Min	85	65	155	Min	105	55	185	Min	-55	-55	5
Avg	178.5	126.4	304.9	Avg	217.9	152.3	370.2	Avg	39.4	25.9	65.3
SD	57.7	54.9	103.7	SD	61.5	59.7	109.6	SD	41.9	34.5	46.4

  

April 2014				April 2015				April 2015-2014			
n=124	Listening	Reading	Total	n=124	Listening	Reading	Total	n=124	Listening	Reading	Total
Max	370	410	715	Max	410	465	875	Max	130	190	300
Min	90	65	185	Min	125	70	220	Min	-25	-35	5
Avg	181.4	135.4	316.8	Avg	221.7	162.9	384.6	Avg	40.3	27.5	67.8
SD	48.0	51.6	90.1	SD	53.9	72.1	118.4	SD	31.4	38.5	50.1

(Table 1: Transition of TOEIC Scores at NITNC)

## e-Learning / TLT

リーディング教材 1-10

WP752311 様

STEP 1 問題1 / 4 正答: 0問 誤答: 0問 (正解率0%) 学習時間 0:00:08

Learning Time on this article

60 seconds to answer the question 53 P 0

Fog is a major cause of accidents on highways in some areas. Every year many thousands of people lose their lives, because fog can dangerously reduce visibility. The drivers cannot see very far ahead.

Click "A" through "D" as your answer

Number of the coins you have got on this article

A so they have more time to read the signs.

B so they go faster to avoid accidents.

C so they do not have time to have accidents.

D so they do not have time to avoid accidents.

Choose the best answer, then click Enter!

Enter

トップページへ

STEP表

ログアウト

(Figure 1: Extensive Reading)

e-Learning / TLT  
リーディング教材 1-10 WP752311 様

STEP 1 問題2 / 4 正答: 1問 誤答: 0問 (正解率25%) 学習時間 0:03:51

Click Start to begin, then click Enter to go to the next chunk.

霧は 霧は Fog is a m

原因  
運転手は、はるか彼方まで見通すことができない。

結果  
運転手は、事故を避ける時間がない。

次へ

(Figure 2: Intensive Reading Part 1)



## 5. 主な発表論文等

[雑誌論文] (計 4 件)

- ① FUKUCHI Kayoko、Naoshi KANAZAWA、Toward Computer Evaluation System through English Education at Public Elementary Schools in Japan -Adjective Comprehension and Retention in Semantic Markedness and Unmarkedness through Japanese Early Childhood English Education-、Innovation in Language Learning、査読有、11 巻、2018、pp. 386-390、<https://conference.pixel-online.net/ICT4LL/files/ict411/ed0011/FP/1220-SLA3568-FP-ICT4LL11.pdf>
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[学会発表] (計 4 件)

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## 6. 研究組織

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