

LEARNING SUPPORT FOR ENGLISH COMPOSITION BY ASKING BACK QUESTIONS

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Abstract: There are several gaps between Japanese and English expressions, such as suppositive expressions. These gaps make it difficult for Japanese students to study English composition. For example, realizable possibilities are described clearly in English suppositive expressions, on the other hand, they are frequently omitted in Japanese suppositive expressions. As a result, when Japanese students translate Japanese suppositive expressions into English, they are often forced to reveal the realizable possibilities which are not described clearly in Japanese expressions. In this way, it is important to make students aware of realizable possibilities when they try to translate Japanese suppositive expressions into English. To solve this problem, in this paper, we propose a learning support method for English composition by using asking back questions. Our system asks users back and makes them aware of realizable possibility.

1 INTRODUCTION

It is difficult for Japanese students to study English composition because there are several gaps between Japanese and English expressions. Take realizable possibility in suppositive expressions for example. In English sentences, realizable possibilities are clearly expressed in suppositive expressions.

(ex 1) I'll call you when I get to Narita Airport.

(ex 2) If I get to Narita Airport, I'll call you.

(ex 1) shows that the speaker is sure to get to Narita Airport. On the other hand, (ex 2) shows that the speaker has a fifty-fifty chance of getting there. In contrast, in Japanese sentences, realizable possibilities are frequently omitted or expressed ambiguously.

(ex 3) *Narita kuko* (airport) *ni* (to) *tsui* (get) *tara* (when/if) *denwa* (call) *shimasu* (will).

In this sentence, the possibility of getting to Narita Airport is not expressed clearly. Both a man who is sure to get to Narita Airport and a man who has a fifty-fifty chance of getting there can speak (ex 3).

As a result, when Japanese students translate Japanese suppositive expressions into English, they are often forced to reveal realizable possibility because they are not described clearly in Japanese suppositive expressions (Figure 1).

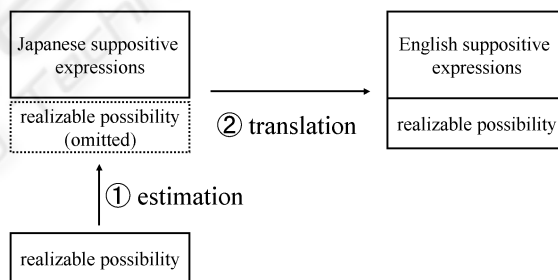


Figure 1: The translation process of Japanese suppositive expressions into English: 1. the estimation of realizable possibility, 2. translation.

A considerable number of studies have been made on English composition support by extracting English expressions from Web documents (Oshika 05) (Takeda 94) (Yamamoto 99) (EDP 07). In these studies, however, little attention has been given to the gaps between Japanese and English expressions. Suppose that a Japanese student wants to translate (ex 3), however, does not know that the realizable possibility is the key to translating Japanese suppositive expressions into English. If (ex 1) and (ex 2) are given as the translation examples of (ex 3) to the student, it is difficult for the student to determine which sentence is proper without the viewpoint of realizable possibil-

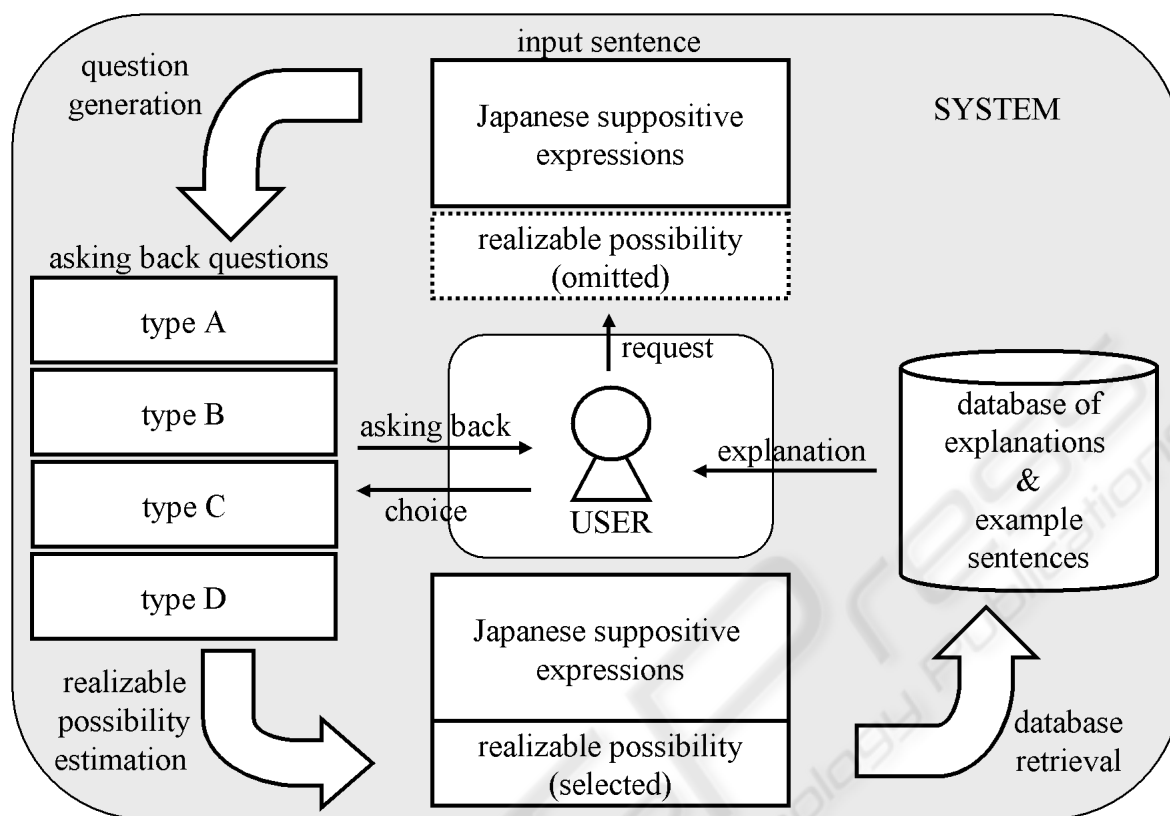


Figure 2: System overview.

ity. As a result, it is important to make students aware of the gaps, in this case, the realizable possibility.

To solve this problem, we propose a learning support method for English composition by asking back questions. Our system asks users back and make them aware of the gaps between Japanese and English expressions. There are several kinds of gaps between Japanese and English expressions. However, in this paper, we have concentrated on suppositive expressions because space is limited.

2 ASKING BACK QUESTIONS ABOUT POSSIBILITY

From the viewpoint of realizable possibility, English suppositive expressions can be classified into four types:

Type A expressions about general or habitual activities and the possibility is very strong

(ex 4) When you mix red and yellow, you get orange.

(ex 5) You always play baseball whenever the weather is nice.

Type B expressions about one-time activities and the possibility is very strong

(ex 6) You will play baseball when the weather is nice.

Type C expressions about one-time activities and the possibility is fifty-fifty

(ex 7) If the weather is nice, you will play baseball.

Type D expressions about one-time activities and the possibility is very weak

(ex 8) If the weather was nice, you would play baseball.

Because, in Japanese suppositive expressions, realizable possibilities are frequently omitted or expressed ambiguously, it is important to make Japanese students aware of the realizable possibilities.

To solve this problem, our system asks users back and make them aware of the gaps between Japanese and English expressions. Figure 2 shows the overview of our system. Our system applies morphologic anal-

ysis(Kurohashi 05) to an input sentence, obtains conditional clause (basic and original form) and consequence clause, generates four types of asking back questions according to the rules in Figure 3 and gives them to the user. Take (ex 9) for example.

(ex 9) *moshi* (when/if) *tenki* (weather) *ga haretara* (nice), *yakyu* (baseball) *ga dekiru* (will play).

From (ex 9), our system extracts “*moshi* (when/if) *tenki* (weather) *ga haretara* (nice), ” as the conditional clause, on the other hand, “*yakyu* (baseball) *ga dekiru* (will play)” as the conclusion clause. Then, according to the rules in Figure 3, our system generates four types of asking back questions:

Asking back question (type A) [for general or habitual activities]

(ex 10) *tenki ga hareru toki ha, itsumo yakyu ga dekiru, desu ka?* (You think it always happens that you play baseball whenever the weather is nice, don't you?)

Asking back question (type B) [for very strong possibility]

(ex 11) *tenki ga hareru koto ha kakujitsu ni okoru node, moshi tenki ga harereba yakyu ga dekiru, desu ka?* (You think it is certainly that the weather will be nice and it certainly happens that you will play baseball, don't you?)

Asking back question (type C) [for fifty-fifty possibility]

(ex 12) *tenki ga hareru ka douka wakaranai ga, moshi tenki ga harereba yakyu ga dekiru, desu ka?* (You think it is fifty-fifty that the weather will be nice and are tentatively planning that you will play baseball, don't you?)

Asking back question (type D) [for very weak possibility]

(ex 13) *tenki ga hareru koto ha arie nai ga, moshi tenki ga harereba yakyu ga dekiru, desu ka?* (You think it is almost impossible that the weather will be nice, however, you are dreaming that you would play baseball, don't you?)

Then, the user answers the asking back questions, finds a gap between Japanese and English expressions, and translates the Japanese expression into English by using explanations and example sentences which are generated by our system and consistent with the selected possibility. For example, Figure 4 (a) shows the explanation and example sentences which our system gives to the user when he/she chooses very strong realizable possibility. On the

(rule for type A) [for general or habitual activities]
[conditional clause (basic form)] *toki* (whenever) *ha itsumo* (always) [consequence clause] *desu ka?* (You think it always happens that [consequence clause] whenever [condition clause], don't you?)

(rule for type B) [for very strong possibility]
[conditional clause (basic form)] *koto ha kakujitsu ni* (certainly) *okoru* (happen) *node* [conditional clause (original form)] [consequence clause] *desu ka?* (You think it is certainly that [conditional clause] and it certainly happens that [consequence clause], don't you?)

(rule for type C) [for fifty-fifty possibility]
[conditional clause (basic form)] *ka douka wakaranai ga* (fifty-fifty) [conditional clause (original form)] [consequence clause] *desu ka?* (You think it is fifty-fifty that [conditional clause] and are tentatively planning that [consequence clause], don't you?)

(rule for type D) [for very weak possibility]
[conditional clause (basic form)] *koto ha arie nai ga,* (impossible) [conditional clause (original form)] [consequence clause] *desu ka?* (You think it is almost impossible that [conditional clause], however, you are dreaming that [consequence clause], don't you?)

Figure 3: Generation rules of Asking back question about realizable possibility.

<p>Explanation You want to compose English suppositive expressions with very strong realizable possibilities. In such a case, you should not use if clause.</p> <p>Japanese <i>Narita kuko ni tsui tara denwa shimasu</i></p> <p>English I'll call you when I get to Narita Airport.</p>

(a) An explanation and example sentences for English suppositive expressions with very strong realizable possibilities.

<p>Explanation You want to compose English suppositive expressions with fifty-fifty realizable possibilities. In such a case, you should use if clause.</p> <p>Japanese <i>Narita kuko ni tsui tara denwa shimasu</i></p> <p>English If I get to Narita Airport, I'll call you.</p>
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(b) An explanation and example sentences for English suppositive expressions with fifty-fifty realizable possibilities.

Figure 4: Explanations and example sentences which are consistent with user's selected realizable possibility.

other hand, Figure 4 (b) shows the explanation and example sentences which our system gives to the user when he/she chooses fifty-fifty realizable possibility.

3 EXPERIMENTAL RESULTS

We examined whether nine Japanese students understood realizable possibility which was consistent with the given situation. In this experiments, we gave the following Japanese suppositive sentences

(input 1) 962 *do* (degrees centigrade) *made* (to) *kanetsushi* (heat) *tara* (when/if), *gin* (silver) *ha tokeru* (melt)

(input 2) *shigoto* (job) *ga owat* (over) *tara* (when/if), *renraku shimasu* (get in touch)

(input 3) *ano ki* (the tree) *wo kiritaoshi* (cut down) *tara* (when/if), *motto* (more) *nagame* (view) *ga yoku naru darou* (be good).

and some situations of each input sentence (Figure 5) to the students. Then, our system gave asking back questions to the students and we examined whether the students understood realizable possibility which was consistent with the given situations. Table 1 shows the experimental results. In Table 1, underlined numbers show the numbers of students who select asking back questions which, we first thought, were consistent with the given situations. As shown in Table 1, students' answers were almost the same as our answers, except in situation 1-2 and 3-3.

In situation 1-2, we first thought that type C asking back question was consistent with situation 1-2. However, four students selected type D asking back question because they thought that their friends were not specialists and it is impossible to heat silver above 900 degrees Celsius. On the other hand, in situation 3-3, five students selected type D asking back question which, we first thought, were consistent with situation 3-3. The reason why these five students thought the possibility was very weak was that they thought they could not cut down the tree in someone else's garden. In contrast, three students selected type C asking back question. The reason why these three students thought the possibility was fifty-fifty was that they thought the tree would fall down naturally or somebody would cut it down. In both cases, students' answers were divided and some students found the possibility which was not consistent with what we expected, however, consistent with what they thought. It shows the effectiveness of our method.

situation 1-1	You are a science teacher. You will tell the nature of silver to your students.
situation 1-2	You will give some advices to your friend who intends to performing experiments.
(a) situations for input 1	
situation 2-1	There are prospects of finishing your task.
situation 2-2	There are little prospects of finishing your task.
situation 2-3	There are no prospects of finishing your task.
(b) situations for input 2	
situation 3-1	You are rebuilding your house and have already decided to cut down the tree.
situation 3-2	You are rebuilding your house and now discussing whether you cut down the tree.
situation 3-3	You are taking a walk and watch the tree in someone else's garden.
(c) situations for input 3	

Figure 5: Situations for input 1, 2, and 3.

Table 1: Experimental Results.

asking back question	situation							
	1-1	1-2	2-1	2-2	2-3	3-1	3-2	3-3
type A	<u>6</u>	0	1	0	0	0	1	1
type B	2	0	<u>8</u>	1	0	<u>9</u>	0	0
type C	1	<u>5</u>	0	<u>8</u>	2	0	<u>8</u>	3
type D	0	4	0	0	<u>7</u>	0	0	<u>5</u>

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