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The present study compares argumentation essays written by Non-Native Speaker (NNS) students to ones by Native Speaker (NS) students by looking at the use of causal relation and the Problem-Solution text pattern, drawing on the clause-relational approach. The study focuses on how the word 'problem', marking the discourse as a shell noun, is involved in these patterns. By examining the relation between 'problem' and verb, and also interpreting a change in the Problem-Solution discourse stages, this paper will show that 'problem' in the NS essays was mostly involved in causal relation and contributed to forming the conventional Problem-Solution pattern, while in the NNS essays, half of the instances of 'problem' were in non-causal relation and formed random and irregular discourse patterns. This sometimes occurred with 'problem' in causal relation, accounted for by such factors as types of verbs combined with 'problem', forms of the verbs, and subject types in the sentence. This paper will show some clear correlations between expressing causal relation and constructing the regular Problem-Solution pattern, and discuss pedagogical implications. The findings will be useful in the teaching of advanced level students so that they can write more effective and readable argumentation essays.

Keywords: discourse markers, shell noun, causal relation, problem-solution, clause-relational approach.

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I. INTRODUCTION

English argumentation essays written by non-native speaker (NNS) students, even at an advanced level, show some non-native-like features covering a wide range (e.g., spelling and grammatical errors, selection of words). The present study investigates the features of NNS essays, in comparison with essays by native speaker (NS) students, by analyzing the way the students express causal relation and Problem-Solution through use of the noun *problem*. *Problem*, in the present study, is defined as a shell noun, which has a general meaning and can serve as a marker of the discourse by recovering its specific meanings expressed in the text. Therefore, how *problem* is marking the shift of the functional segments of Problem-Solution, which is typically comprised of the functional segments of [Situation – Problem – Response/ Solution – Evaluation] (Hoey, 1983; 2001), is examined. Also, how *problem*, which is a causative noun, is used in the argumentation essays to express a causal relation is examined. Problem statements are related to causal relation, as can be shown in the statement '*Construction of building will cause a noise problem*' (Flowerdew, 2008: 54), and this suggests a relation between causal relation and Problem-Solution. Thus, the present study investigates the argumentation essays by NNS students and NS students through comparison of the use of causal relations and the Problem-Solution text pattern by examining the use of *problem* as a shell noun. The study is conducted by setting up the following specific questions:

Q1: To what extent is *problem* involved in causal relations in NNS essays, in comparison with NS essays?

Q2: How does *problem* in causal relation work in constructing Problem-Solution in each of the corpora?

Q3: How does *problem* not involved in causal relation work in constructing Problem-Solution in each of the corpora?

This paper will show that many cases of *problem* in the NNS essays were not used for causal relation, affecting the construction of Problem-Solution, and discuss pedagogical implications of the findings. Problem-Solution is a commonly used text pattern in argumentation essays, and proper use of the pattern can greatly improve the quality of NNS essays. The findings will be particularly helpful for advanced students to write more cohesive and more readable and convincing argumentation essays.

II. LITERATURE REVIEW

The present study is conducted by using the concepts of causal relation, the Problem-Solution text pattern, and discourse marking nouns, which this paper calls shell nouns. Concerning shell nouns, they are a group of nouns that have general and unspecific meanings that can serve as discourse marking devices in dual, but interrelated, ways. In one way, they can organize the text by referring to the textual segments and recovering their specific meanings, and in another way, they can determine the direction of the discourse by expressing the writer's evaluation, or stance, toward the referred content, at some critical points in the discourse (i.e., *fact, opinion*, or *rumor* which can express different perceptions of the writer to the same referent).These nouns are employed in varied ways, by emphasizing different aspects of the functions. These terms seem to focus mostly on such text organizing roles of this class of nouns as *enumerative* (Tadros, 1985), *anaphoric noun* (Francis, 1986), *carrier noun* (Ivanić, 1991), *shell noun* (Schmid, 2000), and *signalling noun* (J. Flowerdew, 2003). In contrast, Jiang & Hyland (2017) use the term *metadiscursive noun,* and emphasize the evaluative, or 'stance-taking,' aspect of the nouns that help determine the direction of the argument.

Of the two types of discourse marking roles, mostly the text organizing aspect of the nouns have been applied to assess the quality of NNS students' essays, often in comparison with NS essays (Aktas & Cortes, 2008; Caldwell, 2009; L. Flowerdew, 2003; J. Flowerdew, 2010; Hinkel, 2001, 2003; Nesi, 2012; Schanding & Pae, 2018). These studies, although conducted with different variables (e.g., L1 types, topics, text length) in different research contexts, have found some similar, and of course also some different, tendencies of NNS's use of these nouns, including less frequent use of these nouns by NNS than NS students but general competence in the use of core nouns by NNS students (e.g., Caldwell, 2009; J. Flowerdew, 2010; L. Flowerdew, 2003; Hinkel, 2001), vagueness of referred contents of the nouns, and roles of these nouns as superficial labels whose meanings are not substantiated (e.g., Caldwell, 2009; Hinkel, 2001), or particular difficulty in using the th-N syntactic pattern by NNS students (Aktas & Cortes, 2008; Nesi, 2012). (These findings are also in Benitez-Castro & Thompson, 2015, who provide a review and summary of the use of this class of nouns.)

My own research (Tahara, 2017, 2020a) mostly confirms these findings in studies with essays by L1 Japanese students and L1 English American students, conducted by calling this class of nouns interchangeably either *shell noun* (Tahara, 2017) or *metadiscursive noun* (Tahara, 2020a). While the findings reviewed so far mostly concern the meaning connection between the noun and the referred segments, Tahara (2020a) also noted some differences in the meaning connection between the neighboring clauses, with the use of *reason* and *problem*. In particular, occurring in such expressions as '*this is a reason*', '*this is a problem*', and '*for this reason*', *reason* and *problem* were used to express reasons in the NS texts, but they were not in NNS texts, indicating a difference in expressing causal relation in the two groups of essays. Concerning students' use of causal relation, there is a dearth of literature, and if such studies do exist, they often seem to follow another type of inquiry from one examining cohesive roles of nouns and discourse construction; additionally, the studies are mostly not about students' essays. For example, Izumi (2018) is a comparison of causal relation in NNS and NS essays, but the text analysis is done from the viewpoint of how (e.g., from whose

perspective) a cause-result relation is described in the sentence.

In addition, Tahara (2020b), which employed the term *metadiscursive noun*, also noted some differences in the way Problem-Solution is formed by discourse marking *problem* in the NNS and NS essays. The students' use of Problem-Solution is also an area that has not been studied well. Galán & Pérez (2004) address the Problem-Solution pattern, but their aim is to assess the effects of teaching the patterns of text organization, not to directly analyze the quality of the students' texts. Exceptions are studies by L. Flowerdew (2003: 2008). In particular, L. Flowerdew (2008) reports on an extensive investigation of the use of the Problem-Solution pattern by NS and NNS students, from varied, but interrelated, perspectives including causal semantic relations expressed with several noun items, which, however, are not limited to discourse marking nouns. The present study builds on L. Flowerdew (2008) and investigates how NS and NNS students use causal relation, and how its use affects the Problem-Solution pattern in their argumentation essays, through use of *problem* as a discourse marking shell noun.

III. METHODOLOGY

The present study takes the clause-relational approach (Hoey & Winter, 1986), which looks both at connections between clauses and sentences, and at relations across larger stretches of text (Hoey, 1983, in L. Flowerdew, 2008: 1) Both relations have to be made sense of by the reader through an act of interpretation. While 'causal relation' is a type of logical sequence relation where one segment is placed next to the other, and always involves a cause/reason and an effect/result, Problem-Solution is a larger textual pattern that frequently occurs in a society where the language is used, and thus is a culturally engrained rhetorical pattern (McCarthy, 1991). Culturally engrained rhetorical patterns, which include General-Specific and Hypothetical-Real (McCarthy, 1991), occur in a sequence of functional segments. Problem-Solution normally comprises [Situation – Problem – Solution/ Response – Evaluation] functional segments (Hoey, 1983, 2001), and each of the functional segments is signaled by 'a number of vocabulary items [that] characteristically cluster around the elements of larger patterns in texts' (McCarthy, 1991: 79). For example, *concern* and *difficulty* cluster around in the Problem segment, and *solve* and *solution*, in the Response segment. For causal relation and Problem-Solution, *problem* is functioning as a signalling noun for these patterns.

Another feature of *problem* is that it is a causative noun (Fang & Kennedy, 1992: Table 2). *Problem* is not as explicit a causative noun as *reason*, but it is an implicit causative noun, where causation is expressed in the context and can be perceived in the context (Fang & Kennedy, 1992: 66). On the practical side, causality of *problem* can be identified by the verb that it is combined with; as reported in Flowerdew (2008: 58), stating the causal relation is 'overwhelmingly expressed via… causative verbs' that are collocated with a noun.

IV. PROCEDURES

For the comparison of the two groups of essays, NNS argumentation essays written by L1 Japanese students and NS essays written by L1 English American students are used. They are drawn from the Japanese subcorpus of the International Corpus of Learner English (JICLE), and from the US subcorpus of the Louvain Corpus of Native English (US), respectively. The two sets of essays are not exactly comparable, in that JICLE consists of 366 essays with 202,099 word tokens, while US is made up of 176 essays with 150,530 word tokens. Accordingly, the JICLE essays are much shorter than the US essays. Essay topics are not totally comparable either. Except for some common topics such as the death penalty and nuclear energy, JICLE-only topics include significance of learning of English in Japan, the seniority system, and making plans for a future career, and the US-only topics include religious and racial discrimination in society, use of euthanasia, and abortion.

For the text analysis, AntConc (Laurence, 2012) is used. With the use of its concordance lines, *problem* functioning as a marker of the discourse

is identified among all the token of *problem*, and also, *problem* involved in causal relation is separated from *problem* that is not. Also, for the interpretation of how *problem* is shifting the discourse from one functional segment to another, AntConc's Text View function is used, which can show the textual context that *problem* occurs in.

Identification of the Problem-Solution pattern is conducted by employing the concept that 'a number of vocabulary items characteristically cluster round the elements of larger patterns in text' (McCarthy, 1991: 79). Problem-Solution is normally comprised of [Situation-Problem-Solution/ Response- Evaluation] functional segments (Hoey, 1983, 2001), and the Problem element, for example, can be identified by such signalling vocabulary as *concern, difficulty* and *dilemma*, while the Response element can be signaled by expressions like *change* and *come up with*.

Regarding *problem*'s involvement in a causal relation, it is identified from combinations of '*problem* and verb,' by drawing on the finding that the reason-result causal relation, which is the most typical and frequent type of causal relation (Crombie, 1985), is overwhelmingly expressed via explicit and implicit causative verbs (L. Flowerdew, 2008) (see Section 3 for more). Then for the examination of '*problem* and verb' combinations, *problem* occurring in th-N and th-be-N patterns is used. These two syntactic patterns are part of Schmid's (2000) host syntactic patterns, where shell nouns can function as markers of the discourse, and which occur as follows with *problem*:

- N-be-CL (*problem* +*be verb* + *that/to*-clause.)
- N:CL (*problem that/to*-clause)
- th-N (*this/that problem*)
- th-be-N (*this/that/it* + *be* verb + *problem*)

Of these syntactic patterns, however, a '*problem* + verb' combination is unlikely to be formed in N:CL and N-be-CL, and thus occurrences of *problem* only in th-N and th-be-N patterns are examined for their involvement in causal relations.

For the examination of shell noun frequency, raw data is normalized to a base figure of 'per 100,000 words', and the log-likelihood (hereinafter LL) test is applied. The critical value for the LL test will be 3.84, using the 0.05 significance level for rejecting the null hypothesis. Also, there were cases observed of improper selection of verbs that are combined with *problem* (e.g., *set about, solute*) and use of general verb *do* that avoids specific verbs. The present study counts *problem* combined with such verbs as being in causal relations when the meanings are adequately communicated.

V. DATA ANALYSIS

This section analyzes the JICLE and the US corpora by examining ratios of occurrences of *problem* that are involved in causal relation occurring for th-N and th-be-N (Section 5.1), followed by an interpretation of Problem-Solution discourse segments formed by *problem* for each of the syntactic patterns.

5.1 Frequencies of Problem Involved in Causal Relation

The total occurrences of *problem* as a discourse marker identified by recovering its meaning in JICLE and US are at the normalized ratio of 26:17, respectively (hereinafter frequency ratios are expressed in the order of JICLE followed by US) (LL 2.86), indicating a non-significant difference in the two corpora. Of these total occurrences, *problem* in causal relation is not significantly different, either, both in terms of the overall frequencies and for the individual syntactic patterns, as shown below in Table 6.1 (* indicates that the figure includes incorrect collocations with verbs):

Table 1: Frequencies of 'problem' in causal relation in JICLE and US

Syntactic patterns		Problem as discourse marker (raw frequencies, JICLE:US) [normalized, LL]	Problem in causal relation (raw frequencies, JICLE: US) [normalized, LL]
th-N	th-N+v	(13:7) [6:4, LL 0.99]	(4:6) [2:3, LL 0.60]
	v+th-N	(19:8) [9:5, LL 1.96]	(9:6) [4.4, LL 0.04]
	In-Phrase-th-N	(5:6) [2:4, LL 0.62]	(5*:6) [2:4, LL 0.62]
th-be-N		(15:5) [7:3, LL 2.72]	(4:5) [2:3, LL 0.17]
Total		(52:26) [26:17, LL 2.86]	(22:23) [11:15, LL 1.29]

However, a clear difference in the two corpora is the ratio of *problem* in causal relation against *problem* that occurs as a marker of the discourse: 23 out of 26 (raw frequency) in US, and 22 out of 52 in JICLE. This means that *problem* in US is almost always in causal relation, while more than half of the occurrences of *problem* in JICLE are not in causal relation. What factors can account for the difference and how the difference affects the construction of Problem-Solution in the two corpora is analyzed in the next section.

5.2 Problem Occurring for th-be-N

Examined firstly is *problem* for th-be-N (e.g., *It is a problem*). While occurrences of *problem* in US are all in causal relation, most of those in JICLE are in noncausal relation. Shown below is the list of this use of *problem* in the US corpus:

Concordances 1: Problem in Causal Relation for th-be-N in US

students to join in the prayer does it become a **problem**. The act of trying to force an unwilling person
r been compensated by the dollar. This poses a **problem**, since undoubtedly those at-home tasks,
ee to be rightfully theirs. This also causes a **problem** because each group only sees what they are
quite obvious that it is a very significant **problem**. Examples like this show how stereotypes and
or mom and dad to answer. That's not always a **problem** if the child is old enough to know and it is

The verb for th-be-N is a *be*-verb, but it has the meaning of explicit causative verb: Some *be*-verbs are replaced by causative verbs (i. e., *become, pose*, *cause*) and the others occur as they are in the form of *be* verb. In either case, the phrase *'be a problem'* in US has the meaning that 'the referred content creates a future problem' as suggested in Flowerdew (2008: 58). It can also be seen in Concordances 1 that a causal relation with *'be a problem'* in US is sometimes made more explicit with a 'marker of reason' such as *because* and *since*.

Viewed from a larger textual perspective, *problem* for th-be-N is serving to shift the discourse from [Situation to Problem], as in the extract below:

Extract 1:

> ...Only when students (or faculty) force any students to join in the prayer does it become a problem. The act of trying to force an unwilling person to digest the religious philosophy of another may lead to an uncomfortable educational setting that would hinder learning and social growth. (US)

The referent of *problem* (*students...force any students to join in the prayer*) is a Situation implying a problem, and the succeeding segment (*The act... hinder learning and social growth*) is the Problem segment (signaled by

force, uncomfortable, hinder), where the problem content is made clear.

In the JICLE corpus, there are four instances of *problem* in causal relation, although most instances are in noncausal relation. Seen firstly in Concordances 2 are the occurrences of *problem* in causal relation:

Concordances 2: Problem in Causal Relation for th-be-N in JICLE

first son of his family, it's going to be a **problem**. My family tree stops at my parents. My parents d
e. If the husband doesn't work, it is heavy **problem**. They can't live a usual life without husband's p
t everyone always think so. I think that is **problem**. Sometimes master English is very painful to peop
me to meet. I can say exactly why this is a **problem**: When the cell phone was not popular, we

Unlike in US, there is no use of causative verbs replacing *be*-verbs of causative meanings, but otherwise the use of *problem* is similar to that in US, with the *be* verb used within the semantics of an explicit causative verb. Also, the phrase *'be a problem'* has the meaning of 'the referred content creates a future problem', and *problem* shifts the discourse from [Situation to Problem], as in US.

In JICLE, however, *problem* for th-be-N occurred much more frequently in noncausal relation, as shown below (* means *problem* is in non-causal relation):

Concordances 3: Problem in non-causal relation for th-be-N in JICLE

ch as computers. In this situation, it have a big **problem*** from bring up our Japan. But in pertly, th
cell-phone for children. It is very difficult **problem***; I understand why their parents provide ch
freedm of expression. This is very difficult **problem*** and doesn't have the end of the argument.
he right to choose the goods. This is the serious **problem*** rather than genetic-engineered food's safe
consider how to say in English. I think that is a **problem***. I wonder what is the best solution of thi
e examination of Japanese university. It is a big **problem***. In order to increase the number of
is judged by only one standard. This is very big **problem***; it should be judged more values. Because
ly few people can do these perfect. It is serious **problem***. School education should improve their
nd can't understand well. I think this is serious **Problem***, and we have to solve this problem. Maybe
ould not watch them. This difference is difficult **problem***. I think the one of solutions is the V-chi
master v is very important, but that is difficult **Problem*** and we have to think the way to master

The *be* verb has a stative meaning, indicating the referred segment is a problem. It is also noticeable that *problem* is often premodified by evaluative adjectives (e.g., *difficult, serious, big*).

Viewed within a larger text pattern, the evaluation seems to terminate the discourse, forming a break of a coherent discourse, as exemplified in the extract below:

Extract 2:

> <text initial> In Japanese class, teachers take too much time to teach English grammar. I think that it is too enough. However, students aim an entrance examination of Japanese university. It is a big problem. In order to increase the number of children who can speak English well, the government has to change the educational system. (JICLE)

In Extract 2, the referent of *problem*, which forms the Problem segment, does not clearly state what is a problem, which is for one thing attributable to insufficient information, and also, to the bidirectional information. In one way the problem content is signaled by *too enough* and *too much*, but at the same time it expresses some positive aspect to the referred content, stating '*students aim an entrance examination*'. The vague Problem segment is abruptly terminated by evaluative adjectives, and the following Response segment (signaled by *solution, increase, judge*) is also a sudden start of a new segment. Thus, *problem* in non-causal relation forms the discourse of [sudden termination of Problem to sudden Response].

This section has shown that instances of *problem* for th-be-N in US are all in causal relation and shift the discourse from [Situation to Problem]. In the JICLE corpus, except four cases, *problem* is mostly in noncausal relation, and forms an irregular Problem - Solution sequence, characterized by a break of the cohesive link in the discourse.

5.3 Problem Occurring for th-N

Problem for th-N has the following subtypes: 'th-N + verb', 'verb + th-N' and 'th-N in a phrase' (hereinafter th-N+v, v+th-N, In-Phrase-th-N, respectively), depending on the position of th-N in the clause. *Problem* occurring in different positions exhibits some position-specific features.

5.3.1 Problem for 'th-N + v'

For 'th-N+v', *problem* is almost always in causal relation (6 out of 7) in US, while many of the occurrences of *problem* in JICLE (9 out of 13) were in non-causal relation. Shown firstly is the list of instances of *problem* in the US corpus, below:

Concordances 4: Problem in causal and non-causal relation for th-N+v in US

docile and backward in modern standards, the **problem*** still exists. From the very beginning the
rand illusion of welfare reform. Rather, the **problem** can be solved only by providing more training in
high school and college environment. This **problem** could easily be curtailed by lowering the drink
respond to antibiotic treatment at all. This **problem** is compounded by the fact that not all illness
but the administrators who allow them, the **problem** is not dealt with as it should be, but pushed interfere
with living healthy. Of course this **problem** is not the model's fault, they are doing t
hey have nothing to stand on. The **problem** with discrimination in the workplace isn't always financial

Of the cases of *problem* in causal relation, four of them are combined with implicit causative verbs (i.e., *solve, curtail, compound, deal with*), and the remaining two are with a *be* verb. Firstly concerning implicit causative verbs, they 'entail the meaning of make somebody/thing do something' (Fang & Kennedy, 1992: 65), as opposed to explicit causative verbs (e.g., *create, cause, pose, present, become, result from*) (Flowerdew, 2008: 58, 99).[1] Implicit causative verbs are a device that can shift the discourse from Problem to Response (Flowerdew, 2008: 58, 100), as can be seen in the following example from Concordances 4:.

Extract 3:

> Alcoholism is a growing problem in the United States today that affects all ages. Too many students fight alcoholism in high school and college environment. This problem could easily be curtailed by lowering the drinking age from twenty-one to eighteen. (US)

The referent of *problem* forms the Problem segment, and it is followed by a Response (signaled by *curtail, lower*). In this context, *curtail* is functioning as a two-way signal, shifting the discourse from [Problem to Response]. Noticeable is that *curtail,* as well as other implicit verbs in Concordances 4 often occur in the regular lexico-grammatical pattern of '(*can*) + passive verb + *by-doing',* and the Response (signaled by verbs) comes with a means of the response, or how the response can be realized (expressed by *by-doing*). Concerning the use of the two *be* verbs in Concordances 4, it has the meaning of explicit causative verbs and can be replaced by *attributed to* or *stem from* (e.g., *this problem is not the model's fault*). With the explicit causative meaning, the verb expresses clear cause-result relation in the clauses, but no shift of the discourse is perceived, and *problem* stays within the Problem segment. It may be that an explicit causative verb is not a two-way signal and simply expresses a cause-result relation between the clauses.

[1] In Flowerdew (2008) implicit causative verbs are described as verbs that have a positive semantic prosody, although verbs of negative prosody are not clearly denied. The present study, however, considers implicit causative verbs, which 'entail the meaning of make somebody/thing do something' (Fang & Kennedy, 199: 65), to include both positive (e.g., *solve, curtail*) and negative (e.g., *compound*) types of meanings.

In contrast, in JICLE, there are some occurrences of *problem* for th-N+v that occur in causal relation, but *problem* seems not to be functioning to form a regular Problem-Solution sequence, as shown below:

Concordances 5: Problem in causal l relation for th-N+v in JICLE

achers in English in elementary school. This **problem** is going to be solved. The Ministry of Education
ts former condition. Now the most difficult **problem** was solved! Many problems which should be solv
at something like this can happen. Also this **problem** may make other new problem. Some people who
all she had eaten. The doctor said that this **problem** didn't come from her physical problem but it cam

One of the verbs, in the 4th concordance line in Concordances 5, is an explicit causative verb, *come from*, and it simply expresses a cause-result relation between the clauses. The remaining three instances of *problem* are combined with implicit causative verbs (i.e., *solve, make*), but each of them forms a varied Problem-Solution sequence, which may be attributable to different forms of the verbs: future tense, past passive voice, and active voice. With future tense (*is going to be solved*), *problem* shifts the discourse from [Problem to Response], and how the problem is solved follows, similarly to the case in US. With past passive voice (*was solved*), the preceding segment of *problem* seems like a Response: *problem* terminates the [Response segment] as indicated with an exclamation mark (!); and the discourse shift to the next point is indicated by *Now*. With *make*, an implicit verb in active voice, *problem* shifts the discourse from [Problem to Problem]. This is how different forms of implicit verbs are affecting the Problem-Solution pattern.

Next is *problem* for th-N+v in JICLE that is in non-causal relation, as shown below:

Concordances 6: Problem in non-causal l relation for th-N+v in JICLE

traffic light is "green". Like this, the **problem*** of colors can provide us with a matter of sciene
WWII ended, did it bring us happiness? The **problem*** still last now. Germany invaded Jewish person.
o the highhanded attitude of settlers, the **problem*** consists in lack of correct information, They co
on and study self-paced but everyday. Cost **problem*** is still remained, but more and more company or
it and neglects people's will. Whenever the **problem*** happens between people and official organization
om the people without permission. Could the **problem*** of land happen in Japan? In Japan, there are t
bility that it might be a fraudulence. This **problem*** has often happened these days. Thirdly, indivis
ter about computers. In car factories, the **problem*** is serious, I think. Industrial robots work ins
imself. It should respect the privacy. The **problem*** of privacy was more complicated. It must respec

Problem is in non-causal relation combined with a stative verb or *be* verb. With stative verbs (e.g., *consist, remain, happen*), *problem,* referring to the Problem segment, shifts the discourse to a Response segment. However, the Response, signaled by stative verbs, does not express an active response, and the shift from [Problem to Response] is not clearly perceived. In the case of the *be* verb, it has the meaning of a stative verb and occurs with an evaluative adjective (i.e., *serious, complicated*). With the evaluative adjective being used by referring to the vaguely explained problem content, the Problem segment is abruptly terminated. Thus, in JICLE, *problem* for th-N+v in non-causal relation does not form the regular Problem-Solution sequence with either a stative verb or a *be* verb.

Following are the main findings about the use of *problem* for th-N+v in US and JICLE:

- In the US corpus, *problem* functioned to form a [Problem to Response] sequence, being combined with implicit verbs that often occurred in a regular lexicogrammatical pattern for the verbs. A *be* verb was also used in the meaning of an explicit causative verb, similar to such explicit causative verbs as *attributed to* or *stem from,* but *problem* that

combined with a *be* verb of explicit causative meaning did not shift the Problem-Solution stages.

- In JICLE, some of the occurrences of *problem* were in causal relation combined with implicit verbs. However, maybe affected by varied forms of the verbs (tense, aspect), *problem* did not form the regular Problem-Solution. When involved in non-causal relation, *problem* combined with a stative verb to form a vague shift from [Problem to Response], and *problem* combined with a *be* verb brought the Problem to an abrupt termination, accounted for by an evaluative adjective that premodified *problem*.

5.3.2 Problem for v+th-N

The 'v+th-N' syntactic pattern occurs with the subject, but preferred subject types are different in JICLE and US. Shown below is the use of *problem* in US:

Concordances 7: Problem in causal (and non-causal relation) for v+th-N in US

obvious that Mr Gingrich does not understand the **problem*** of Welfare Reform at all. None of these
rd of Trustees at USC should closely examined this **problem***. The university requires that teacher's
gather evidence, they will eliminate much of the **problem** with the credibility. <ICLE US MRQ 0046>
onlies???) Gallon size zip-lock bags, solve this **problem**. In these a person can fit a whole bottle
e name of life. Symptom treatment exacerbates the **problem** by forcing more people into the medical
ergency spending bill. This bill only stalls the **problem**. If the government does not pass the
ank and the Great Depression began. This made the **problem** of homelessness become more numerous
orance and inequality. It is not dealing with the **problem**, but ignoring it and in some ways ignitig,

Except for two occurrences, most of the instances of *problem* are in causal relation combined with a range of implicit verbs (e.g., *eliminate, solve, exacerbate, stall*). Meanwhile, the subject is an inanimate entity or demonstrative that is the theme, either promoted from the rheme in the preceding clause, or a repetition of the theme in the preceding clause (Eggins, 2004, 324), as shown below:

Ex. 1: In the future, if authorities obtain search warrants before they gather evidence, they will eliminate much of the problem with the credibility. <the text end>
Ex. 2: This pact between the United States Congress and the President is just another name for an emergency spending bill. This bill only stalls the problem.
Ex. 3: Tying this to an already stereotyped black population is the cause of further ignorance and inequality. It is not dealing with the problem, but ignoring it.

When these examples are viewed in a larger text, the subject refers to the preceding segment, which is a Response, and *problem* terminates the Response by evaluating the response, with the evaluation expressed by the meaning of implicit verbs (e.g., *eliminate, stalls, deal with*). This means that *problem* is functioning to shift the discourse from [Response to Evaluation].

In JICLE, half of the instances of *problem* for v+th-N (nine out of 19) occurred in causal relation, with three types of subject: demonstrative, nominal phrase, and agents. Although in causal relation, *problem* with these subjects formed varied discourse patterns. Shown below is *problem* in causal relation with demonstrative and nominal phrases in JICLE (// means a paragraph break):

Concordances 8: Problem in causal relation for v+th-N with inanimate agent in JICLE

etting a punishment. But this will not solve this **problem**. Of course it is very important but if w
surroundings. To kill criminals don't solve the **problem.**// Death penalty can solve nothing. Crime
//Finally, using own name as an alias does not solve the **problem** at all. In fact, one must change

With a demonstrative subject, *problem* seems to be functioning similarly to that in US. However, with the subjects made up of nominal phrases (*To kill criminals, Using own name*), which are newly

mentioned in the discourse, or at least not mentioned in a short-distance preceding segment, their use causes a break of cohesion in the discourse. Besides, with the verb always in the negative, occurring in the sentence type of *'problem does not solve the problem'*, *problem* is functioning to shift the discourse in an abrupt way, either to summarize the discourse with a generalized statement (the 2nd concordance line), or start a new focus (the 3rd concordance line).

Next is when *problem* in causal relation occurs with an agent subject, as shown below in Concordances 9:

Concordances 9: Problem in causal relation for v+th-N with agent subject in JICLE

ally, It is tme that the men cause these terrible **problem** for our own comfortability. But, it .
sion. The government office should set about this **problem** in no time. But smokers consideration is
Also the government should do something with this **problem**, as long as we take pride in being advanc
What can the Japanese Government do toward this **problem**? This is only my idea but I think it
ot understand English. If we overcome this serious **problem**, we can get native speaker's thought. In
ll do the same thing if we don't try to solve the **problem** from the bottom. I think it is unreasonable

The use of *problem* refers back to the Problem segment and shifts it to a Response (signaled by implicit verbs, e.g., *cause, set about, overcome*). However, the agent subject, which falls on the Response segment, is a new element suddenly introduced into the discourse, and the shift from the Problem to the Response is abrupt. Also, the verbs, which are counted as implicit verbs, mostly comprise repetitions of the general verb *do* and also include a collocational error (*set about*), and this indicates a lack of vocabulary in the area of implicit verbs.

Next is *problem* in non-causal relation in JICLE, as shown below:

Concordances 10: Problem in non-causal relation for v+th-N in JICLE

it back to former condition. He bothered on this **problem*** for a long time. And one day, seeing his
nese" As I couldn't speak Chinese, I told him the **problem*** in my bathroom by English. Because I u
s imitated earnestly. I notice such a fundamental **problem*** one by one, and the English writing whi
reaksuch situations? As we can't consider this **problem*** without private problem between man and
er country. We have to think some more about this **problem*** because the situation is changing all t
e to think about the other side's opinion and the **problem***. The other side's opinion was this;
teach pupils and students much more clearly about the **problem*** of gender discrimination and tell them
lped us to look at the Ainu. We must look at the **problem*** of a minority people not only in Japan b
ted, without considering. We have not to take the **problem*** as easy. After all, I think marriage, to
have to pay much money. We should not leave this **problem*** as it is. Sex education's role is how t

The use of *problem* in Concordances 10 mostly occurs with agent subjects (e.g., *I, we*), and the verbs are non-causative, often mental verbs (e.g., *bother, notice, think, consider*) that describe what people think or feel (Biber, Johnsson, Leech, Conrad & Finegan, 1999: 371). Occurring in the sentence form of 'agent + mental verb + *problem*', *problem* often forms a narrative-like discourse, describing events on one topic occurring in a sequence from the viewpoint of the agent, as in the Extract below:

Extract 5:

> Soon after the soup had fined, he thought of the idea that dried noodle would be durable. Though he realized that the noodle would be durable, it is very difficult to put it back to former condition. He bothered on this problem for a long time. And one day, seeing his wife frying tempura, suddenly an idea came to him;

Thus, with agent and mental verb, *problem* in non-causal relation for v+th-N forms a narrative-like discourse, not like Problem-Solution.

The following is a summary of the main findings about the use of *problem* for v+th-N in JICLE and US:

- In the US corpus, *problem* occurred with an inanimate subject, which was established following the rheme-theme pattern, and the verbs constituted a range of implicit verbs. In such cases, *problem* formed a regular discourse shift from [Problem to Response].
- In JICLE, half of the instances of *problem* were in causal relation, but the subject types were different from those in US. A subject type specific to JICLE was a nominal phrase that was abruptly used in the discourse. Accordingly, there was a break of the discourse, and *problem* suddenly terminated the discourse or started a new topic. The agent subject additionally occurred with *problem* in causal relation. It also formed a sudden introduction to the discourse, and *problem* shifted the Problem segment to Response, in an abrupt way. The remaining half of the occurrences of *problem* were in non-causal relation, and the subject was the agent. *Problem* then formed discourse like a narrative rather than Problem-Solution.

5.3.3 Problem for In-Phrase-th-N

For In-Phrase-th-N, the use of *problem* is similar in JICLE and US. *Problem* as a metadiscursive item occurred in similar frequency, with the normalized ratio of 2:4 (LL 0.62), and all of the occurrences were involved in causal relation, used in the adverbial phrase of *'to* + infinitive + *problem'* in both corpora, as shown below:

Concordances 11: Problem in causal relation for In-Phrase-th-N in US

ued. Our lawmakers have done little to solve this **problem**. ne Hundreds of frivolous lawsuits filed
r agrees, <*>. The only way to put an end to this **problem** is to institute mandatory drug testing of
ressive gun control laws are needed to reduce the **problem**. However, legislative measures will work
action must be taken immediately to alleviate the **problem**. People living without shelter has been a
ng out of control and they show ways to curb this **problem**. The authors cite examples of how this
pollution and companies that contributed to this **problem**. Rational Choice Theory urges <*> <R>.

Concordances 12: Problem in causal relation for In-Phrase-th-N in JICLE

to meet those goals. I have an idea to solve the **problem**. To support Japanese-Filipino children, the
ns with parental affection in order to solve this **problem**. Now English is a international language. W
need countermeasures against them to resolve the **problem**. Also, we must take care not to be infected
we and Ainu work together to solve about the Ainu-**problem**. Today we often think about human right. Fo
, elementary school, is a good way to solute this **problem**. The second reason is about the equality of

In a larger context, *problem* functions to shift the discourse from [Problem to Response], where the Response is signaled by implicit verbs.

A clear difference in the two corpora, however, is in the range of implicit verbs. The US use a range of implicit verbs (e.g., *alleviate, put an end to, reduce, curb*), but in JICLE, implicit verbs are mostly repetitions of *solve*, and some are used incorrectly (e.g., *solve about, solute*).

5.4 Summary – Problem for Causal Relation and Problem-Solution in the Two Corpora

The study has shown that *problem,* functioning as a discourse marking shell noun, was almost always in causal relation, and helped construct the Problem-Solution pattern in the US corpus, mostly to connect [Problem to Response], and sometimes [Situation to Problem] or to conclude the Response. However, in the JICLE corpus, more than half of the occurrences of *problem* were in noncausal relation, and *problem* in noncausal relation formed discourse that can be barely perceived as, or is very different from, Problem-Solution. In addition, *problem* in causal relation often failed to form a regular, conventional Problem-Solution sequence, either. The features of the JICLE essays that negatively affected the construction of regular Problem-Solution patterns would seem to be accounted for

by such factors as: a) types of verbs combined with *problem*, b) forms of implicit verbs, c) the subject type in the sentence, and d) the use of the *be* verb.

Regarding the types of verbs the high frequency of *problem* in noncausal relation in JICLE means that *problem* was often combined with stative verbs, and *problem* did not form conventional Problem-Solution stages. This pattern of the use of *problem* was well exhibited with th-N+v and v+th-N (see Appendix 1). Concerning th-N+v (*problem* + stative verb), a shift of the discourse from [Problem to Response] was not clear, as the Response segment was signaled by stative verbs (e.g., *last, consist, remain*). Concerning the v+th-N syntactic pattern (stative verb + *problem*), the verb in JICLE was often a mental verb (e.g., *bother, notice, think*), and *problem* constructed a narrative-like discourse.

Another factor that lead to irregular Problem-Solution in JICLE was the fact that although the students used implicit causative verbs, they occurred in random forms (e.g., voice, tense). This was shown for th-N+v, in particular. In US, the implicit verb that combined with *problem* regularly occurred in the passive form, or more specifically in such lexico-grammatical patterns for the verb as '(*can*) + passive verb + *by-doing*', and *problem* formed a regular shift of the discourse from [Problem to Response]. In JICLE, however, implicit verbs, actually repetition of *solve*, came in varied tense and voice forms, and the Problem-Solution pattern was in varied patterns. This seems to suggest a role of forms of causative verbs in constructing Problem-Solution, although the correlation between verb forms and the Problem-Solution pattern is not clear and needs more research.

The preferred type of subject also affected the sequence of Problem-Solution, as exhibited with *problem* in causal relation for v+th-N. In US, the subject was an inanimate entity, as the theme promoted from the rheme in the preceding clause, and *problem* connected the two clauses in causal relation and formed a conventional [Problem to Response] sequence. In JICLE, although in causal relation, the preferred subject was an agent (e.g., *we, the government*) and also a nominal phrase (e.g., *to kill criminals*) to a lesser degree. With a nominal phrase, it was newly introduced in the discourse, and *problem* suddenly terminated the discourse, or started a new topic. With an agent subject, too, it was also a sudden introduction to the discourse. Although *problem* shifted [Problem to Response], the shift to Response was abrupt and sudden.

Lastly, although only occurring in a small number of cases, the *be* verb was used with different meanings in the two corpora. In US, *be* verbs always had the semantics of explicit causative verbs, such as *attributed to* or *stem from* for th-N+v and *become* or *pose* for th-be-N; and *problem* often contributed to the conventional Problem-Solution sequence. However, in JICLE, *be* verbs were used in the stative meaning, and *problem,* mostly combined with an evaluative adjective, terminated the discourse, but in an abrupt manner, as exhibited for th-N+v (e.g., *problem is serious*), and for th-be-N (*It is a problem*). An abrupt discourse termination was a feature of the JICLE essays in the present study, and this was in part accounted for by the use of *be* verbs.

VI. PEDAGOGICAL IMPLICATIONS

Problem as a discourse marking shell noun in US was almost always in causal relation and formed a regular patterning of Problem-Solution sequence, while more than half the occurrences of *problem* in JICLE were in non-causal relation, resulting in deviated forms of Problem-Solution or other types of discourse patterns. This result seems, in one way, to indicate a parallel phenomenon to the finding about lexicalization patterns and discourse marking roles of nouns in NNS and NS students essays pointed to in past studies of the use of shell nouns (e.g., Caldwell, 2009; Hinkel, 2001; Tahara, 2020a). In NS essays, shell nouns can implicitly shift, or navigate, the discourse by sufficiently explaining the noun meanings, and this has a link to the present finding that nearly all of the instances of *problem* in US served to shift functional segments of Problem-Solution following the conventional sequence. Conversely, in NNS essays the meanings of shell nouns tended

not to be sufficiently explained, and these nouns were superficial labels that shifted the discourse in an abrupt and sudden way, and this phenomenon may link to the present finding that many instances of *problem* in JICLE formed a random discourse pattern. In other words, the present study seems to indirectly suggest that efficient use of causal relation and Problem-Solution in US was related to sufficient lexicalization of *problem*.

Focusing specifically on causal relation and Problem-Solution in NNS essays, the present study showed that a proper use of causal relation is important for Problem-Solution, and for this purpose more teaching of implicit verbs to NNS students is indicated by the study. Despite the fact that implicit verbs can function as a two-way signal (Flowerdew, 2003, 2008), the JICLE students lacked this area of vocabulary. Commonly used implicit verbs should be taught, and the teaching could be conducted by incorporating forms of implicit verbs (e.g., tense, voice) and lexico-grammatical patterns (collocation, colligation, formulaic sequence) of the verbs, with th-N and th-be-N. The th-N pattern is reported to be a difficult pattern for NNS students to use (Aktas & Cortes, 2008; Nesi, 2012), and practicing verbs with these syntactic patterns would be particularly beneficial for the students. In addition to implicit verbs, proper establishment of the subject, such as one that follows the rheme-theme pattern, was also suggested by the study, and this should be taught in relation to the surrounding texts.

Another type of causative verbs, explicit causative verbs, may not need special attention in teaching. As the present study indicated, they did not occur very often in causal relation, and the NNS and the NS students used them in a similar way. However, regarding the use of *be* verbs in the semantics of explicit causative nouns, it should be explored more, particularly for researchers and teachers to understand the attribution of a causative meaning to the *be* verb.

VII. LIMITATIONS AND FURTHER STUDY

Inevitably, the present study has limitations. The two corpora were not large enough for generalization of the findings, and the lengths of the texts and essay topics were not comparable in the two corpora. These differences may have influenced the findings. It will be crucial for the findings to be tested with larger corpora to be either supported or negated. Also, the findings in the present study were about *problem,* and subsequent inquiries could be conducted with other problem-indicating nouns (e.g., *obstacle, concern, drawback*). Problem-Solution is an important text pattern in academic essays, and the present study has made it explicit that a proper use of causal relation can help to form Problem-Solution in a conventional sequence. In addition, some relation between lexicalization of shell nouns and formation of rhetorical patterns was suggested. The present study analyzed student essays in terms of the use of shell nouns, causal relation, and Problem-Solution. This line of the inquiry should be pursued further for the teaching of argumentation essays of an internationally acceptable level in EFL classes.

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APPENDIX

Causative and non-causative verbs with *problem* for th-N and th-be-N in JICLE and US

	JICLE		US	
	Non-causative verbs, N=30	Causative verbs, N=22	Non-causative verbs, N=3	Causative verbs, N=23
th-N (subject) + v (N=13:7)	provide, last, consist, remain, happen (3) be (2)	solve (2) make come from	Exist	curtail, deal with, save, compound, be (2)
v+th-N agent subject (N=16:1)	bother, tell, notice, teach, consider, think (2), look at, take, leave	overcome, (not) solve, set about*, cause, do* (2)	Examine	0
v+th-N inanimate subject (N=3:7)	0	(not) solve (3)	understand,	eliminate, deal with, solve, exacerbate, stall, make
In-Phrase-th-N (N=5:6)	0	solve (2), resolve, solve about*, solute*	0	alleviate, curb, put an end, reduce, solve, contribute to
th-be-N (N=15:5)	be (11)	be (4)		be (2), become, cause, pose

(The figures are raw frequencies. The verbs without figures occurred once.)

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