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論　文

Reading Comprehension
--A *keyword* approach to adult EFL learning--

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Key words: Reading comprehension, Acquiring, Foreign vocabulary, Retaining, Working memory, Prior-knowledge, *Keyword* method.

Introduction

The L2 learner's ultimate goal is to achieve language proficiency in a way that is both efficient and effective; and yet, for many Japanese EFL learners, learning a new language, particularly one that has a different writing system that their L1 holds various obstacles, not the least of which is acquiring and retaining enough vocabulary to gain proficiency in Reading comprehension.

Comprehending the written word is a constructive process involving the integration of both prior-knowledge and incoming information operating within the cognitive system. Prior-knowledge is a key factor in comprehension. If the learner is unable to relate incoming information with his/her existing knowledge base, the constructive process will result in memorization, which, all too often, tends to be the strategy adopted among L2 learners whose first and second language are relatively unrelated.

In terms of Reading comprehension, the learner, instead of integrating foreign vocabulary through associations with his/her existing knowledge, thereby generating new schemata and understanding, generally tends to opt for memorizing foreign words, which, in the long run, turns out to be a very ineffective and inefficient encoding process with respect to the relationship between proficiency and comprehension. The key to acquiring proficiency in Reading comprehension, then, is word association.

The topic of the paper deals with a mnemonic learning technique called the *keyword* method (Ellis & Beaton, 1995, Crutcher, 1998; Gathercole & Thron, 1998), which offers learners a mediator, or cognitive means, to associate both L1 and L2 knowledge structures by creating an imaged-based association relating L2 vocabulary with L1 knowledge, and thereby provides the reader with an effectively cognitive means for acquiring and retaining enough vocabulary to achieve proficiency in Reading. This paper is divided into five sections. Section I provides a brief summary on working memory, its architecture and the role it plays in the reading process. In section II, two models dealing with the first stage of L2 acquisition and the role prior-knowledge plays in mediating the acquisition and retention of foreign vocabulary are outlined. Section III presents the *keyword* method, which is followed by a model depicting the *keyword* approach for Japanese EFL learners in section IV. Section V concludes this paper.

Ⅰ. Working memory : The L2 reading process

Because its resources are an integral part of adult language processing (e.g., Baddely, 1980; Lighbown & Spada, 1993; Ellis, 1994; Grass & Selinker, 1994; Crutcher, 1998; Gathercole & Thron, 1998), the role working memory plays is central in understanding how L2 learners acquire proficiency in reading a foreign language,

Housed in long-term memory, which consists of prior-knowledge: scripts (Schank, 1976), schemata (Rumelhart, D.E.,1975; Norman & Bobrow, 1976), and frames (Minskey, 1975), working memory plays an active role interpreting and constructing incoming information, by serving as an interface point between incoming information and long-term memory. The integration of new information into existing knowledge structures occurs at the point when incoming information and prior-knowledge are drawn into working memory, processed, and then transferred back to long-term memory for storage and retrieval (Kinsch, & Dijk, 1987). If the reader lacks prior-knowledge relating to the incoming information, comprehension will not occur.

In Baddeley's (1986) influential model, working memory is presented in the form of a production-system architecture with a central executive consisting of two domain-specific slave systems: the phonological loop and the visuo-spatial sketchpad, in which information is temporarily stored, and which learners use in imagery tasks (Wang, & Thomas, 1995). The phonological loop plays a crucial role in vocabulary acquisition for both native and foreign languages. The main problem in acquiring foreign vocabulary is in utilizing the phonological loop, which is oriented toward native language rather than foreign language. In other words, representations within the loop itself benefit from L1 prior-knowledge, which means the learning system operates more effectively on native language acquisition than on foreign language learning.

Working memory plays a central role in reading comprehension. Reading proficiency is associated with both greater structural processing and unitization. The former is just one of many top-down factors in enhanced reading efficiency, whereas the latter is one of the many by-products(Blanchard,1998). Top-down information processing interacts with and guides bottom-up information processing during reading comprehension. Within working memory, information from bottom-up sources, as well as information from top-down sources jointly contribute to the reading process and comprehension. Prior-knowledge is the basis of top-down processing, and therefore might make up for Linguistic shortcomings (Urguhart, & Weir,1998), whereas bottom-up processing is the extraction of visual information from the printed words.[1)]

With regards to L2 acquisition, a meaning-based comprehension strategy takes precedence over a grammar-based one (Grass, S.1996). The reason being, L2 learning more so than L1 acquisition tends to rely to great extent on general learning mechanisms and principles since strategies used for processing foreign-language discourse are influenced by those learned earlier in native-language discourse(Tao, & Healy,1998). With regards to the role, L1 plays in L2 acquisition, neither principles nor parameters of Universal Grammer (UG) are available to adults[2)]; L1 replaces L2 (Blery-Vroman, 1989).

Ⅱ. L2 Acquisition: Acquiring and Retaining Foreign Vocabulary

Prior-knowledge influences the way in which all learners encode new information. For L2 learners, the

question remains as to what extent their L1 knowledge influences or contributes to how they encode their L2.

Kroll and Stewart, (1994: 370) propose a revised hierarchical model, provided as Fig. 1, representing translation asymmetry. The model adopts both the word association model's lexical links and the concept mediation model's conceptual links (e.g., Chen & Ho,1986; Tzelgov, & Eben-Ezra,1992). A solid line indicates a stronger link, whereas a dashed lined indicates a weaker link. Lexical-level links are stronger from L1 to L2 than from L2 to L1, and conceptual links are weaker for L2 than for L1.

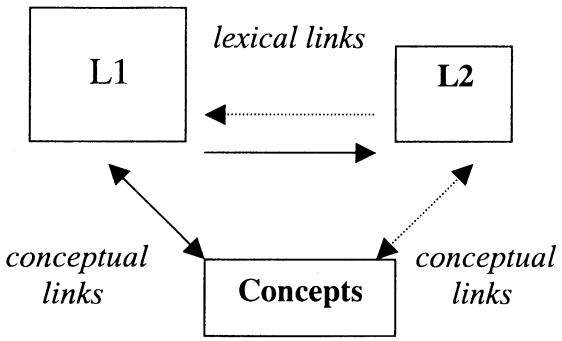

Fig. 1 The revised hierarchical model

During initial stages of learning, lexical connections from L2 to L1 are used to retrieve the associated translation at the lexical level (Kroll, & Stewart, 1994) and, since L1 is more likely to engage in conceptual processing translation from L1 to L2 tends to be conceptually mediated.

For EFL learners, increasing L2 proficiency is consistent with both unitization of common English words and structural/contextual processing and, despite differences in L1 achievement, the L1 -> L2 transfer still takes effect given that L1-conceptual links formed early in childhood always remain stronger.

An important factor influencing the L1 -> L2 transfer is the similarity between the two languages. Less transfer is expected if two languages have dissimilar features. However, the reader should note that in Fox (1996) cross-language semantic priming effects were found for L1 primes on L2 targets in the opposite direction.

The distributed lexical /conceptual feature model proposed by Kroll and de Groot (1997: 234), provided as Fig. 2, assumes the beginning of a homogeneous lexical architecture wherein all words, that is, all words known to a given individual, are attached to a common level of conceptual and lexical features. However, this model does maintain the notion of separate lexicons by positing language-specific stores at the level of the lemma. The model consists of independent lemma associated with lexical patterns and concepts of feature bundles for each language. Both pools of lexical and conceptual features themselves are assumed to be shared across languages (Kroll,& de Groot ,1997).

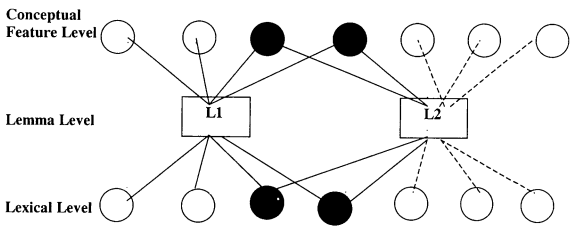

Fig. 2 The distributed lexical / conceptual feature model

Feature overlap at the conceptual level, as demonstrated in Fig. 2, represent translation equivalent, whereas feature overlap at the lemma level express distinct representations. The lexical level is presented in a distributed fashion allowing for partial overlap characteristic of words that share lexical features.

Casting the process of interlingual activation in terms of feature overlap, both at the conceptual and lexeme level, offers an interpretive framework for studies reporting that concrete words tend to share a high level of feature overlap across languages owing to referents with similar meanings. Abstract words, on the

other hand, tend to be more culturally bound than concrete words. Although an abstract word and its translation are likely to share some aspects of meaning, the claim of the distributed feature model is that fewer features overlap for abstract translations than for concrete translations.

Ⅲ. The *keyword* method

Numerous studies have confirmed the effectiveness of the *keyword* method in both foreign language and native language vocabulary learning (Atkinson & Raugh, 1975; Paivio & Desrochers, 1981; Pressley, Levin, & Delaney, 1982; Pressley & Levin, 1985; Cohen, 1987; Desrochers & Begg,1987; Sternberg,1987; Tulving,1991; Ellis & Beaton,1995; Crutcher,1998;).

The *keyword* method is a two-step vocabulary learning technique that first requires the learner to relate the foreign word to a *keyword* by drawing on L1 phonological knowledge, such as acoustic similarity and/or orthographic similarity. The relationship between phonological memory and vocabulary acquisition comes from a study by Baddeley, Papagno, & Vallar (1998), which Gathercole and Baddely (1990) provide comment on in Harley (1995:148).

> Acquiring a new vocabulary item...must minimally involve achieving a stable long-term representation of a sequence of sound, which is linked, with other representations specifying the particular instance or class of instances. The locus of the contribution of phonological memory skills seems most likely to be in the process of establishing a stable phonological representation as [sic], in order to do this, a temporary representation has presumably to be achieved first. Immediate phonological memory seems an appropriate medium for this temporary representation and, presumably, constructing the stable long-term memory representation of the novel event will interact with the adequacy of this temporary representation. By this analysis, the better the short-term representation, the faster the long-term learning (pp.451-452).

The second step in the *keyword* method requires the learner to relate the *keyword* and the foreign word by forming an interactive image based on each word's referent. A successful *keyword* or mediator requires the following factors:

(i) The *keyword* must "sound as much as possible" like the foreign word. The *keyword* has to cue the foreign word's pronunciation so that it sounds as close as possible to the foreign word. Word recall is likely to be best if the *keyword* or part of it overlaps with the initial part or cluster of the foreign word recalled (Horovyitz, Chilian, & Dunnigan, 1969; Desrochers & Begg, 1987).

(ii) The *keyword*'s image must offer a memorable image connecting the *keyword* with the English translation. Concrete nouns, because they are generally easy to image, are good *keywords*; abstract nouns, that is if symbolic imagery comes readily to mind, may also be effective *keywords* (de Groot,1992)

(iii) The probability of remembering the image-based link between the *keyword* and the native word. In deciding on a *keyword* image, the learner has to determine whether s/he will be able to remember or not the native word to

which the *keyword* refers (Besrochers, & Begg, 1987).

Furthermore, in Raugh & Atkinson (1975) a useful *keyword* must be (1) highly imageable, and (2) an effective reminder of the foreign word. The image should readily trigger an association to the foreign word, and the foreign word should readily trigger an association to the image. One form should remind the reader of the other form, and vice versa.

In sum, potential determinants of foreign language vocabulary learnability for the *keyword* are as follows: acoustic similarity between the foreign word and the *keyword*, reminding power between the foreign word and the keyword, imageability of the *keyword*, imageability of the concept, frequency of concept, and the part of speech of both the concept and the *keyword*. Potential determinants for the foreign word are: similarity of orthographic patterns to those of the native script, foreign word length, pronouceability, and similarity of phonotactic patterns to those of the native speech.

As a visual summary of the potential determinants is provided in Ellis and Beaton (1995) and adopted here as Figure 3, with English / Japanese data replacing their German / English data. Explanatory comments will follow in section IV.

Ⅳ. A *keyword* approach for Japanese EFL learners

Before discussing the potential determinants outlined in Figure 3 for Japanese EFL learners, a brief overview of the Japanese orthographic scripts and phonological system will be presented.

Japanese has four writing systems: 1) *Kanji* (Chinese characters), 2) *Hiragana* (A syllabary based on the Japanese phonetic system), 3) *Katakana* (A

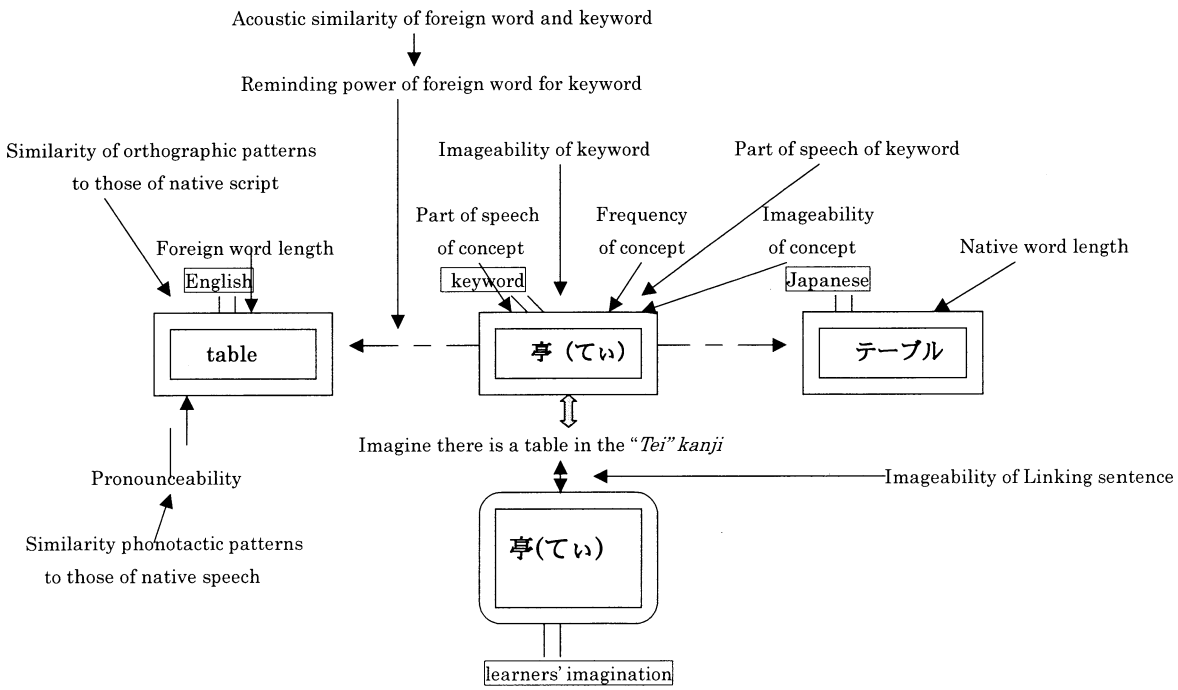

Fig. 3 A revised model of potential determinants of learnability of foreign language vocabulary with keyword mediation

syllabary based on the Japanese phonetic system for non-Japanese words or borrowings), and 4) *Rômaji* (Roman letters).

Having only five standard vowels: /a/, /i/, /u/, /e/, /o/, the Japanese language is phonetically simple. In terms of its syllable structure, Japanese is a CV language, in which syllables are formed by a single vowel (V) or a consonant-vowel (CV) combination (Kawakami, 1977).

Japanese has been borrowing so many English words since the nineteenth century. In fact, the number of borrowings today would be difficult to assess (Arakawa, 1978). English borrowings, moreover, are pronounced using the Japanese phonetic system, and written in *Katakana* more so than *Rômaji* , which tends to be rarely used.

Focusing, now, on the potential determinants outlined in Figure 3, the reader will note a) the foreign word <table>, representing incoming information, or the English vocabulary the Japanese learner must acquire and retain, b) the native word <テーブル>, representing the learner's prior knowledge, or the semantic concept he/she associates with [te:'bu'ru], and c) the *keyword* <亭> [tei], representing the mediator linking the learner's prior knowledge with incoming information.

The *keyword* is written orthographically using the kanji character 亭 [tei]. The foreign word <table> and the keyword <亭> are not orthographically similar, so the learner cannot rely on orthographic similarity as a potential determinant.

Both the foreign word [teibl] and the *keyword* [tei] are acoustically similar in that they share the word-initial sounds [tei]. Moreover, /tei'bl/ and Japanese /tei/ share CV.CV syllable structure, as well as /e:/ and /ei/ vowel length on the first syllable. Given these phonotactic similarities, the assumption is that when the learner hears or reads the word <table> he/she will be reminded of the word 亭 [tei] and its associated meaning "table", and vice versa, when he/she hears or reads the word <table>, he/she will be reminded of the *keyword* 亭 [tei] and its associated meaning, "table".

Lastly, with regards to the concept's frequency, 亭 [tei] is a nominal suffix commonly found in names of popular traditional Japanese restaurants, such as in the restaurant's name 料亭 [rjou'tei]. The restaurant's image brings to one's mind the concept of "table".

In addition, other examples are shown in Fig, 4. Among them, the thick letters are essential points.

The *keyword* method offers L2 learners whose first and second language differ orthographically, a mnemonic strategy by which he/she is able to create prior knowledge relating to incoming information.

English	Keyword	Learner's Imagination	Japanese
buyer /**bái** ə r/	売**買**(ばいばい)する人	**買（ばい）**する人	**バイ**ヤー
conference /**kɑ́n**f ə r ə n s/	会**館**（かいかん）での カンファレンス	**館**（かん）と カンファレンス	カンファレンス
powder /**páu**d ə r/	ベーキング・パウダー （ふくらし**粉**（こ））	**パウ**ダー と **粉（こな）**	**パウ**ダー
rain /**réin**/	レインコート （**雨**（あま）ゴート）	レインと雨（あめ）	**レイン**

Fig. 4 Examples of Keyword approach

Through creating an imageability association relating foreign vocabulary to his/her existing knowledge structure, the reader integrates new information with old, thereby generating schemata resulting in comprehension.

As to how L2 learners should go about determining which factors best suit the most successful mediator or *keyword*, one means is by grouping words according to the categories 'easy' and 'hard' (Arakawa, 1978).[3)]

Easy words	serve, standard, station
Hard words	square, trouble, system

Fig. 5 Easy / Hard word categories

Another approach is to group words according to the concepts 'abstract' and 'concrete' (de Groot, 1992)

Concrete words	square, station
Abstract words	serve, trouble, system, standard

Fig. 6 Concrete / Abstract word categories

The approach taken in this paper adopts both Arakawa (1978) and de Groot (1992) classifications as one inclusive concept: words are best grouped according to all four categories

	Concrete words	**Abstract words**
Easy words	station	serve, standard
Hard words	square	trouble, system

Fig. 7 All word categories

In this way, the L2 learner utilizes a more efficient means of determining the factors best suiting the most successful mediator or *keyword*.

As readers become more experienced and fluent, they will require less time to identify individual words and hence they will tend to be more proficient in identifying a word before identifying all of its component features. Furthermore, given the potential determinants of learnability, Fig. 3, the more the learners use this method, the more successful they will be in acquiring foreign vocabularies.

For adult L2 learners who have already achieved mastery of their native language, a lesser conceptual learning load is involved in acquiring a second language due to the presence of many direct translations between words in the two languages. As for lexical items that have direct translation equivalents, the language learner has only to learn to associate the novel phonological form of the foreign word and then link it with the conceptual specification on the referent that has already been established for native language.

V. Conclusion

The goal of L2 learning is to acquire the conceptual connections that will allow new information to enter into language processing as rapidly and as effectively as L1 processing, so that learners generate effective cues and phonological memory, and utilize the strategies. For L2 learners, an effective means for acquiring conceptual connections is the *keyword* method (Atkinson, & Rough,1975; Ellis & Beaton,1995, The phonological loop not only mediates learning novel phonological forms, it creates a direct relationship between phonological memory skills and acquisition of foreign vocabulary (Service, 1992).

The *keyword* method requires the learner to draw on various orthographic and phonological factors best suiting the most successful mediator or *keyword* - which may pose a problem for learners in term of efficiency given the amount of factors involved. As a possible solution, it has been suggested in this paper

that grouping words according to categories may help reduce the time it takes the learner to determine the best mediator.

In closing, from an EFL teacher's point of view, the *keyword* method tends to be more effective with students who share the same first language. If students have various L1 backgrounds, implementing the *keyword* method tends not to be as effective or efficient. However, given the evidence from earlier work (Hall, Wilson, & Patterson, 1981) suggesting language learners spontaneously use vocabulary learning strategies quite similar to the keyword method, warrants further study on the *keyword* method and its relation to universal language learning strategies.

Note

1. Nuttall(1996) argues the case that the reader must pay close attention to his/her difficult text in order to interpret it. Nuttall claims that he/she first utilizes top-down strategies to establish meaning and if this does not prove sufficient, suggests resorting to the additional information such as examining the syntax and matching this with top-down insights to consider differing interpretation.

2. A theory of Universal Grammar (UG (Chomsky,1980)) makes no claims about L2 acquisition. Eckman (1988) and Flynn(1996) propose that UG would suggest something about the role of UG itself as a biologically determined component of cognition, such as a critical period. If this scenario held, adult L2 acquisition in contrast to child L1 acquisition would involve a large inductive component for language learning. That is, L1 and L2 acquisition are fundamentally different processes so that UG may not be involved in the L2 learning process.

3. The meaning of words with familiar sounds to L 2 leaders are the easy words, and those of words with unfamiliar sounds are the hard words. The easy words are learned more quickly by L 2 learners than the hard words. Feldman & Healy(1995) also stated that phonological processing underlies vocabulary acquisition.

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