論 説

Using a Taxonomy of Vocabulary Learning Strategies to Help Improve Reading Comprehension Skills

John Paul Loucky

＜Abstract＞

Based on a review of literature in the fields of L1 and L2 lexical acquisition and vocabulary development, as well as on studies done by the author at seven colleges in Kyushu, Japan (see Loucky, 1996-present), eight most essential vocabulary learning steps, skills and strategies have been isolated and analyzed. Teaching language learners how to systematically apply this series of crucial strategies can be one of the most effective ways to help them to maximize their vocabulary and language development. This cyclical "Taxonomy of Foreign Language Vocabulary Learning Strategies" is advanced and explained below. Table 1 shows these eight cognitive vocabulary learning processes found to be most effective in our testing, teaching and analysis of Japanese college students' study of English as a foreign language.

Keywords: Vocabulary learning strategies / knowledge scales; Lexical processing taxonomy

I. INTRODUCTION

Bloom (1956) popularized the use of his "Taxonomy of Educational Objectives" to help educators better theorize about components of educational achievement in both affective and cognitive domains. His taxonomy has been greatly influential in the fields of teacher training, curriculum development, and also in the development of both instructional materials having more specific, operationalized behavioral objectives and in test construction based upon these prior objectives.

This article presents a broad overview of lexical processing strategies found in teaching and testing vocabulary development skills at several Japanese colleges. These have been developed into a simple framework, or "Taxonomy of Essential Vocabulary Learning Steps, Skills, and Strategies," along with a Vocabulary Knowledge Scale, shown to have acceptable rates of reliability with learners at various rates of proficiency. This article mainly reports findings concerning the first two strategic steps in this Taxonomy, namely 1) **Assessing, and** 2) **Accessing** word knowledge. Vocabulary knowledge was **assessed** by three evaluative instruments, a) by standardized reading tests (*Gates McGinite, Form* C), b) by number of approximate Headwords known (Nation, 1990), and c) by means of the author-designed Vocabulary Knowledge Scale (called DAVIE, as described in Loucky, 2005a, 2005b). The meanings of new or unknown target language terms were **accessed** by means of five kinds of bilingual dictionaries, four being computerized, at three Japanese colleges (Loucky, 2002a, 2002b; 2003a, 2003b), with better speed and retention shown when students use electronic lexicons but particularly those giving both L1 and L2 information and examples.

II. LITERATURE REVIEW: Comparing and Contrasting L1 and L2 Reading and Lexical Processes

Since reading is a multifaceted, many-leveled

Seinan Jo Gakuin University
Email: loucky @ seinan-jo.ac.jp

complex process, such theoretical constructs can greatly help us to better systematize instruction, as well as better assess its results. As Barnitz (1985) stated, "Reading is a multileveled, interactive, and hypothesis-generating process in which readers construct a meaningful representation of text by using their knowledge of the world and of language" (p. 65). The development of learners' reading and vocabulary skills cannot be completely isolated from their total language growth, since "students gradually develop their sight vocabulary and phonic skills in the context of the total language- communication process" (Barnitz, p. 64). However, it can be extremely helpful to have a clear model of lexical development in mind to help provide a simple framework for more effective instruction, as well as for easier learning and assessment thereof. This work attempts to delineate such a model, entitled a "Taxonomy of Essential Vocabulary Learning Steps, Skills, and Strategies," based upon repeated observations and testing.

Although models of reading and comprehension strategies have proliferated, few specific, testable models of lexical development exist, especially models tried in the fires of EFL experience. For example, Munby's (1978) taxonomy of 19 micro-skills has been popular in some areas of second language syllabus design and curriculum development, but has only two general lexical skills included, with no specific instructional steps listed. Vocabulary related skills in Munby's taxonomy are these: 1) "deducing the meaning and use of unfamiliar lexical items", and 2) "understanding the relations between parts of text through lexical cohesion devices" (Alderson, 2000, p. 10). These guidelines are hardly much to teach from. Thus this author has developed a clearer system for easier teaching and assessment of the various components included in second language lexical development, which overlap L1 processes.

Nation (1994a) and Hatch and Brown (1995) each proposed a set of five stages or steps typically found in vocabulary instruction, which the author has expanded into eight clearly observable processes. Nation (pp. i-v) listed these five different windows of opportunity for lexical learning: 1) When meeting vocabulary for the first time; 2) When establishing previously met vocabulary; 3) When enriching previously met vocabulary; 4) When developing vocabulary strategies; and 5) When developing fluency with known vocabulary. All of the major vocabulary learning and processing steps also may be conveniently characterized by cognitive processes beginning with the letter 'A.' This is also very useful as an instructional mnemonic device, which may be taught as shown in Tables 1 & 2 below.

Table 1:
Depth of Lexical Processing Scale: Applying Taxonomy of Vocabulary Learning Steps, Skills and Strategies (For Teacher Use, Co. 2000)

1) Assessing (by Pre-Test)	**2) Accessing--**	**3) Archiving--**	**4) Analyzing--**
Assessing Vocab. Level by VK Scales; Headwords or Standard Test	MEANING-FOCUSED Accessing Definitions: L1/L2; L1 & L2 (Rapid Access & Recall)	Record Definitions with Means to Recall/Study (Rapid Recording Best)	ROOTWORD-CENTER-ED Word Analysis of Base, Affixes or Suffixes
Use EAP VKS Sample	"Bilingual is Best"	Quickionary Pens with OCR/CBDs	Word Origins/Grammar

5) Anchoring-- in one's memory (ST) until it becomes fixed in Long-Term Memory. Use Mnemonic Devices.	**6) Activating**-USE-FOCUSED (New Words/Phrases Activated by Productive, Expressive Use	**7) Associating**-by Semantic Field Keyword Approach= Categorizing by Related Classes by Keywords	**8) Reassessing, Reviewing and Recycling** --Measure Vocabulary Growth/ Change by Similar Post-Test

Table 2:
Vocabulary Learning Blank Checklist of Lexical Processing Skills
Depth of Lexical Processing Checklist: Eight-Phase Scale for Classroom Instruction
(Quick Tally Form Checklist for Japanese Students' Use, Co. 2000)

1) Assessing (Pre-Test)	**2) Accessing**	**3) Archiving**	**4) Analyzing**

5) Associating	**6) Activating**	**7) Anchoring**	**8) Reassessing, Reviewing and Recycling (Post-Test)**

Phase 1 評価	Phase 2 接近	Phase 3 記録	Phase 4 分離	Phase 5 定着す	Phase 6 整える	Phase 7 活動的	Phase 8 再評価
Attend to & Assess or check on meaning of new words	Access: Ask/ Ascertain meaning	Archive: Record meanings	Analyze: Divide word into parts to get meaning	Anchor: Fix new word's form and meaning	Associate: Organize new words	Activate: Use in productive expression	Reassess, review, recycle (posttest)
A Mark Unknown Words B Make Chances to Learn C Do VKS D Guess E Skip	Connect; always look up words; A BBD* B CBD C MBD D CMD E Full L1 & L2 F WOD	Record; keep clear records	Separate; divide words into parts (e.g., root)	Organize; group under a keyword; A Draw Picture B Think of similar sounding L1 word C Act out verbs	Produce and express; always practice	Fix/hook; fix with memory tricks	Repeat, re-meet, recheck; Study: A Alone using notes B With Partner C In Class Groups

*BBD=Bilingual Book Dictionary; CBD=Computerized Bilingual Dictionary; MBD=Monolingual; Book Dictionary; CMD=Computerized Monolingual Dictionary; WOD=Web Online Dictionary (Note if Mono/Bilingual or Fully Bilingualized Site)

Which of these eight steps do you use REGULARLY when you meet new words? ____
Which unused strategies do you think would be HELPFUL for you to use in the future? ___

Table 3:
Vocabulary Knowledge Scale for Japanese Students (Co. 2000).

Know L1 Japanese Translation A (%) 2 Points	Know L2 English Definition B (%) 3 Points	Can Use Word in a Sentence C (%) 4 Clear or 5 Perfect	Have Heard, but Not Sure D (%) Remember a Phrase using 1 Point	Unknown Word; No Idea at all E (%) No Points	Word Token or Family	Modified ICU # on EAP List
					abandon	1
					abbreviate	2
					abide	3
					ability	4
					abnormal	5
					abolish	6
					abroad	7
					absence	8
					absolute	9
					absorb	10

Date: / / Circle: T1/T2 __ Receptive % or Productive Assessment __ %

Table 3 shows a sample of the Vocabulary Knowledge Scale designed by the author and tested at three Japanese colleges. First it is given receptively, simply allowing students to rate their own knowledge of these or any other target vocabulary words. Given separately one week apart is less threatening to students and also less time-consuming for teachers. When giving this second productive assessment, for words believed to be known, students write in definitions they think they know under columns A & B, writing sentences for C on the back of the test form. (For **Productive Assessment**, for words believed to be known, students write in definitions they think they know under columns A & B, writing sentences for C on the back. Each word 1-10. Perfect Productive Score would be 10 words X 10 points each =100. Compare with Receptive %).

Although incidental learning seems to account for a large amount of L1 vocabulary learning by school-age children, direct instruction clearly aids in both L1 and L2 vocabulary acquisition, and seems to be of primary importance in second and foreign language lexical development. In his study *Comparing the L1 and L2 Mental Lexicon: A Depth of Individual Word Knowledge Model*, Wolter (2001, p. 41) found the two to be similar, with "depth of individual word knowledge determining a given word's degree of integration into the mental lexicon." While there are different ways to know any word, as well as various degrees and depths of word knowledge (See Wolter, 2001), much depends upon the learner's motivation, needs, and desires. A Depth of Lexical Processing Scale developed by this writer (Loucky, 2006) and shown in Appendices A & B can be most useful in guiding students to improve or deepen their processing of new words by helping them to better monitor and use a larger number of known effective vocabulary learning strategies.

Hatch and Brown (1995, Part V, "Vocabulary Learning and Teaching") clarify this process of acquisition as a continuum of developing knowledge, steps and strategies. In their words, "Acquisition does not appear to be a simple throwing of a switch between knowing and not knowing; rather, there seems to be a continuum of knowledge about any word and a learner can be anywhere along the continuum...Any theory or model of vocabulary learning must account for these different levels of knowledge about and use of words" (p. 371). With this principle in mind, the above Vocabulary Knowledge Scale was devised and tested with 74 Japanese college students, proving to give reliable

measures (85-93% accuracy) of both receptive and productive vocabulary knowledge across majors and levels of language proficiency. No claims are made as to long-term learning, since the purpose of studying these first two lexical processing steps was to clarify and compare them. While these are clearly the initial steps required in processing new target language, only degree of word knowledge and speed of initial access and recording (**Step 3, Archiving**) were measured, and not their contribution to the overall process of lexical acquisition or retention. Studies of complex interactive processes such as reading and lexical acquisition of necessity must be limited to certain aspects thereof. This study focused upon helping students to develop these eight major strategies of lexical processing.

III. METHODS: Procedures and Participants

This project involved 63 students distributed over three groups. The students in groups 1-3 were Japanese freshmen engineering students at a national university in Kyushu between 2000 and 2004. Most Japanese students have complete 6 years of English study at the secondary level, but the students in this project averaged 7.32 years of English study, including after school conversation and cram school English training. The Appendix lists the number students in each group and their vocabulary grade level, as assessed by a US-normed standardized reading test (Gates McGinite). The writer has found consistent results in using these to estimate Japanese high school and college students' reading and vocabulary levels over two decades (Loucky, 1996, 1997a, 2002c, 2003a).

The eight major phases of vocabulary learning (shown in Depth of Lexical Processing Scale in Tables 1-3) assessed in each group may be conveniently characterized as a series of processing steps designed to enhance lexical acquisition. These eight major kinds of word processing strategies included in this DLP scale were taught to the Japanese students early in the year and their use was assessed at the end of the year. The Appendix shows these 63 Japanese college students' actual use versus perceived helpfulness of these major processing phases found in this 8-Fold Depth of Lexical Processing Scale.

IV. RESULTS

The following chart (Table 4) briefly summarizes results of these 63 Japanese college engineering students' use versus perceived helpfulness of the major eight phases of lexical processing shown in this DLP Scale. Most used phases were 1) Accessing at 60%, then 2) Archiving or recording at 52%, and 3) Assessing at 45%. 38% said they Analyzed new words, and 36% reported trying to Associate or organize these new words somehow. 33% claimed to Activate or try to use new words by using them in practice on their own while learning them. These were the better used phases or major vocabulary learning strategies (VLSs) reportedly used most often.

Table 4 : (N=63)
Summary Chart of Depth of Lexical Processing Phases Used

Students' Comparison of VLSs Thought to be Useful versus Actively Used

Phase of DLP Scale	Thought to be Useful	Actively Used
Assessing	74%	45%
Accessing	86%	60%
Archiving	93%	52%
Analyzing	47%	38%
Associating	72%	36%
Anchoring	86%	33%
Activating	78%	14%
Reassessing, Reviewing & Recycling	55%	21%

Description of Major Purpose of Each Phase of Lexical Processing

PHASE #:	**Phase 1**	**2**	**3**	**4**
Lexical Processing Phase:	**Assess:** Evaluate Words Known	**Access:** Connect Confirm Meaning	**Archive:** Keep Records Clearly	**Analyze:** Separate by Root & Parts
PHASE #:	**5**	**6**	**7**	**8**
Lexical Processing Phase:	**Associate** Group or Organize; Keyword-Centered	**Activate** Always Practice Using	**Anchor** Fix with Memory Tricks	**Reassess** **Review** **Recycle /Reuse**

V. DISCUSSION

A. Comparing and Contrasting Different Models of Reading

Less than a third of students reported using some of these major phases of vocabulary learning, namely those listed here as 7) Anchoring or fixing by using memory tricks, and 8) Reassessing, Reviewing or Recycling, meaning many don't seem to adequately use these important study or follow-up methods. The following review of reading models and methods is intended to generate and summarize principles that can help to improve the vocabulary and learning processes of foreign language learners.

In the field known as Second Language Reading (or 'SLR'), Barnett (1989) reports (1989, p. 1) that most foreign language reading specialists now view reading as an interactive process. Although almost all reading specialists now recognize that readers' minds interact with whatever type of text they are reading, some define this interactive process as 'creating meaning' while the reader's mental processes work together at different levels (Bernhardt, 1986; Carrell, Devine & Eskey, 1988; Rumelhart, 1977). This writer, however, would prefer to say that readers first must try to 'discover or discern' the author's intended meanings, rather than just 'creating' their own meanings. Traditional views of reading have recognized the author as having his/her own intended meaning. Indeed part of good reading clearly involves higher level reasoning skills, such as discerning or inferring the author's mood or tone, purpose, and original meanings. Questions as to the exact epistemology of reading which seek to answer how much in the reading process comes from the text, versus what comes from the reader's mind and prior experiences, are best left to debates on that subject, such as that by Cunningham and Fitzgerald (1996) in *Reading Research Quarterly*.

Granted, reading is not just a cold, rote and unfeeling process of decoding an author's meanings. Naturally, as these are being approximated a reader is also inputting much from his/her own background knowledge (either of content or formal schemata), as well as projecting expectations upon the text or visualizing images that the author's descriptions are trying to create in their minds. Thus the reading process is indeed interactive in at least two senses. As Alderson (2000, p. 14) wisely describes it,

> Recent accounts of the fluent reading process tend to emphasize that it is rapid, purposeful, motivated, interactive (in terms of component skills as well as the relation between knowledge and the printed word), it is comprehending (readers expect to understand), it is flexible, and it develops gradually (it is the product of long-term effort and gradual improvement). When we are reading, we are clearly engaged in a great deal of mental activity, some of it automatic, some of it conscious.

Good readers do not simply 'create their own meanings' out of thin air, however. First they must turn print into units of meaning within their own minds. Therefore comprehension questions have always been used with the intention of checking to what degree the reader's conceptions agree with the objective truth or reality of a given text. Because reading involves such as wide array of skills, it is clear that good L2 readers must have a larger repertoire of lexical and comprehension strategies to draw upon than will poorer readers. Such a view of reading seems to account best for reading research results to date. If one accepts an 'Interactive Parallel Processing Model' of reading, five important implications for ESL reading research follow. Summarizing Grabe's (1988, p. 70) observations about these findings,

> First, reading as an interactive process... remains an important part of the overall reading models... [but] exactly how these processes interact... is a question for future research. ... Second,... such a view suggests that methods of instruction for rapid visual recognition, for extensive vocabulary development, and for syntactic pattern recognition should become major pedagogical research. ...The third implication is **the need for a massive receptive vocabulary that is rapidly, accurately, and automatically accessed--a fact that may be the greatest single impediment to fluent reading**

by ESL [and EFL] students. This concern may be particularly relevant for students in advanced level ESL courses [which few Japanese college English majors are anymore these days]. Students studying English for academic purposes are...seldom tested specifically for their reading abilities. But many of these students are, in fact, weak in this language area essential for academic success. (this writer's emphasis)

These final two implications may be paraphrased as follows. Poorer readers who cannot rapidly process words due to low vocabulary or decoding skills, if they do not give up or just skip over words in frustration, will often overcompensate by guessing too often. They also tend to read word by word, often fixating on and repeating words which they do not know. Good second language readers who lack relevant background knowledge tend to overcompensate by guessing from the context. Poor readers tend to read in a slow, text-bound manner, struggling to vocalize and understand one word at a time. Lastly, there are clearly various stages of skill development in reading. Chall's (1960) text, *Stages of Reading Development*, proposed five different stages of reading development. These could help to account for different types of overcompensation noted in ESL students. Chall (1960) herself describes various types of processing occurring at each stage of reading, noting that interactive processing begins at or before stage three. The stages she discusses are "prereading, initial reading or decoding, confirmation and fluency, reading for new information, multiple viewpoints, and construction and reconstruction ...While such a multistage approach would have to be modified to meet the specific conditions of the ESL reading context, it does hold out some promise for considering reading skills development in ESL students" (p. 50).

B. Classifications of Reading Comprehension and Lexical Processing Strategies

Looking at cognitive processing as a progressive taxonomy as Bloom did (1985) can help us to see how teachers could do more intentional strategy training to improve both lexical and comprehension development in L1 or L2 reading and language learning. Both can help students to become better able to consciously monitor their own language development and negotiation of meaning as a result. Taken together, Block's (1986) system for coding fifteen comprehension strategies along with the author's eight-step series of lexical processing steps can provide a very useful framework on all three fronts of language education: 1) for better research, 2) for clearer, more simple and systematic teaching, and 3) for easier learning and self-monitoring thereof by learners. Block's (1986) system for coding think-aloud protocols of readers' comprehension strategies was applied and studied with Japanese students by Johnson (2000). The author has summarized these and other studies of reading strategy use in Japan (Loucky, 2005a). He also proposed the use of Vocabulary Knowledge Scales for better assessment of lexical development (Loucky, 2005 b). Then he constructed and recommended use of a simple framework or "Taxonomy of Vocabulary Learning Strategies" (Loucky, 2005c, 2006) for better teaching and assessment of students' lexical development. Scales of reading abilities and means of better assessing interactive processes and strategies used by readers have been most thoroughly analyzed and discussed by Alderson (2000) in his *Assessing Reading* text. Far more studies have been done of native readers, however, and more specific studies of L2 learners and the particular problems they encounter as well as lexical and comprehension strategies used versus neglected are in great need of more study.

Another scale for measuring global reading proficiency can be suggested. Just as oral proficiency is a composite of complexity, fluency, accuracy, and sufficiency, so too reading is composed of several overall skills that encompass having good vocabulary and comprehension abilities. Characteristics of fluent, independent reading have been characterized by many models of reading, but surely include development of the following eight-fold list of global

reading skills, whether in L1 or L2 reading:

1. **Accessibility and Accessing Rate**-The first condition for any successful reading depends upon physical and perceptual **Accessibility** of text, visual health and condition of the reader, and their **Accessing Rate**. "**Accessiblity**" comes at the top of most computer menu lists with good reason, recognizing the fact that perceptual visibility is the foremost condition for accessing or reading any information. Perceptual visibility of text is the major factor when facing any reading task, however **Accessing Rate** is a composite of several skills. These include 1) **Pronunciation Accessibility**, and 2) both L1 and L2 **Definition Accessibility**, which are the two major factors of concern to students attempting to develop reading skills in a second language. These can be greatly enhanced by encouraging and enabling the use of CAI and CBD-mediated development of both lexical / word-processing and text comprehension skills and strategies.

Among the areas of **Accessibility and Accessing Speed and Accuracy** that computers and Web Dictionaries (such as the 1,000 organized at author's www.CALL4ALL.us website) can help to improve for both L1 and L2 readers are the following: 1) Size of target words or text. Recent *Word* programs can enlarge any text on screen from 2-9 times normal size. 2) Shape, size and style of fonts, including the use of **Bold** or *Italics* for added emphasis or glossing of target vocabulary words.
3) Text-to-Speech, present in *Windows Access*, *Windows* 2000, was developed by Learnout and Houspie. Its use can greatly assist foreign language learners by helping to provide them with correct phonetic decoding, pronunciation and intonation, while also pacing up their reading speed at least to a natural speaking level. These are great aids which cannot be overlooked or minimized, and this author knows of no studies yet done on the benefits of is use. However, in this age where "Talking Browsers" are proliferating as popular aids to reading email and websites, it is high time for such studies to be done. The benefits of enabling students to use portable, desktop, laptop or online bilingual dictionary and translation software also need to be further examined for their great potential for much more rapid L1 meaning confirmation and L2 vocabulary accessing and expansion (see Loucky 2002a, 2002b; 2003a, 2003b).

2. **Awareness and Attention**--to both vocabulary and text-processing strategies needed, as well as when and how to use them efficiently needs to be taught and developed systematically in good language programs. Reading researchers need to develop better measures of a learner's degree of "Strategy Consciousness," or meta-cognitive awareness of the importance of the specific strategies listed here.

Alderson summarizes many scales of reading skills and strategies used by different reading researchers. Learners can be asked some simple questions to help measure their awareness of story and lesson content, as well as their lexical and comprehension processing strategy knowledge. One scale he suggests is a ten-point scale rating student awareness developed by Duffy, et al, (1987), including these characteristics of good reading: 1) Involves intentionality, 2) Involves effort, 3) Is systematic, 4) Is self-directed, 5) Involves problem solving [or constantly asks good questions to help guide his reading], 6) Uses skills and rules to get meaning, 7) Is enjoyable, 8) Is a meaning-getting [or centered] activity, 9) Involves conscious processing, and 10) Involves selection of strategies (Alderson, p. 349).

3. **Ability to Monitor and Allocate Strategies**--whether and to what degree lexical and comprehension strategies exist in one's own reading and which need to be used when.

4. **Automaticity**--of Word Recognition and Decoding Skills, both Phonetic and Lexical Proficiency.

5. **Accuracy**--of Comprehension. Degree of Accuracy depends upon level of one's vocabulary, as well as higher level reading and reasoning skills.

6. **Anticipatory Set--Ability to predict accurately** relevant and appropriate 1) Lexis, 2) Collocations or Colligations, 3) Idiomatic / Figurative Expressions, 4) Syntax, 5) Rhetorical structures needed to achieve textual cohesion. Ability to combine the flow of words into a clear and consistent

flow of meaning. Since these skills are so crucial to smooth and coherent processing and negotiation of both aural and written meanings, Cloze Exercises have shown to be effective means of testing and developing them.

7. **Appropriateness and Allusions Understood--** of gender, register, tone, mood, ability to detect bias or point of view, style, cultural and social setting and relevance or suitability, historic and literary allusions, cross-references and allusions, etc.

8. **Ability to Adjust Reading Speed / Reading Rate Flexibility--**A reader's ability to adjust his or her rate to fit various reading purposes and types of texts is well known to be an essential skill for fluent, versatile reading. Complexity of a text's semantic, syntactical and rhetorical structure, as well as the reader's purpose and overall L1 and L2 reading proficiency levels, all contribute to determining how successful a reader is in processing a particular text.

A British Certificate in Communicative Skills in English assesses degrees of skill in five similar areas of reading: 1) Complexity, 2) Range, 3) Speed, 4) Flexibility, and 5) Independence. Regardless of what guidelines or taxonomy of skills one chooses to use, clearly the above skills and strategies are all among the most essential to try to help language learners develop. Since reading development is such a complex process, and FL / SL reading is at least doubly so, it is hoped that this essay has at least shed light on many of the major factors and processing strategies to consider. Some clear techniques and frameworks for better assessment have been offered and tested to some degree at several locations in Japan among college students of different majors and language proficiencies.

North and Schneider (1998) developed a scale that looks at reading as a construct of communicative language development, of more interest to those in ESL / EFL situations. Its four areas of competence are: 1) Strategic, 2) Linguistic, 3) Discourse and 4) Sociolinguistic competence in reading. Guest (2000, pp. 180-181) summarized some of the benefits of a better informed lexical approach to language education. This study and overview of lexical and comprehension strategies lends support to his opinion that:

> In moving towards a more lexically-based syllabus, both teachers and learners can become more aware of how lexis interacts with its linguistic environment, serves interpersonal and social functions, enables structures to cohese / cohere and provides signals for understanding the force of utterances. By becoming more aware of and ultimately being able to impart the centrality of lexis, teachers will be providing learners with tools that will serve as a strong foundation for almost any dimension of second language acquisition.

As Alderson (2000, p. 357) encourages us all to do, it is only by documenting and sharing our explorations that we can better inform and improve our practices in the teaching, testing and assessing of reading skills and strategies, both in first and second language contexts. We must begin at the ground level by improving the teaching and testing of basic, bottom-up lexical processing strategic steps, because only as these are strengthened and become more systematic and second-nature will they help to free up language learners' mental resources to focus more clearly upon comprehension strategies needed for global processing of increasingly longer and more complex reading passages, including EAP and ESP texts.

C. Reading Models, Scales and Taxonomies

Models, scales and taxonomies of reading skills abound, yet we still need better ways to develop and measure individual reader's lexical and text-processing skills and strategies, and more precise ways to measure, monitor, compare L1 versus L 2 reading skill development so as to better enhance foreign language processing, translation and acquisition. With these goals in mind the above assessment tools were developed and tested at several Japanese colleges. Students' self-assessments were highly reliable (85-93% accurate) and their reported degree of satisfaction was also high when using these vocabulary learning strategies and assessment instruments and computerized accessing tools

(Loucky, 2002a, 2002b, 2003a & 2003b).

While attention and monitoring skills are of primary importance in processing any information, **automaticity of lexical processing and word decoding skills** has long been recognized as one essential skill for fluent reading. This and other crucial global reading skills have been characterized above. Analogies have been made to kinds of automatic skills athletes or musicians must develop to play their game or song well. Likewise for fluent reading, as Barnett (1989, p. 16) concludes, "the processing at each stage from visual perception to meaningfulness must be automatic. Skilled readers, therefore, can allocate their attention to comprehension, whereas beginning readers [or low proficiency level FL / SL learners] need more attention for decoding."

Although factors involved in lexical processing, learning and retention overlap, a Taxonomy of the steps, skills and strategies involved is very helpful for analysis and better understanding thereof. Research studies seem to indicate that a Mnemonic Keyword approach can greatly aid in enhancing short-term learning using Steps 3 & 5, "**Archiving and Associating**," whereas a Semantic Field or Schema approach (see Loucky, 2004a, 2004 b) coupled with more "**Activation**" **and** "**Anchoring**" (Steps 6 & 7) assists in moving target words into a learner's longer-term memory.

In any case, long-term memory and retention often does not occur without sufficient cognitive processing of the target language lexis or grammatical forms taking place. The above eight strategies and characteristics seem to be either essential or clearly beneficial and facilitating learning conditions to be met for improving L1 or L2 vocabulary and reading skills. In order to help students maximize their L2 vocabulary learning these conditions should all be met, with a goal to ensuring: 1) More complete text processing, both semantically and syntactically processing new target words / phrases in context; 2) Improved interactive multimedia computer / Internet-assisted instruction (CAI); 3) More interpersonal, interactive communicative methods and AV materials used in a variety or more vivid, memorable social situations. Best yet would be to seek to combine all of these types of exposure to real English to better link and anchor new target vocabulary into students' long-term memory through regular, authentic use, which shared talking browsers (STBs) with Text-to-Speech, various online Web Dictionaries (1,500 collected and organized at the author's www. CALL4ALL.US site), bilingual translation browsers and other CBD devices, and chat clubs can now help to facilitate.

D. Learning from Earlier Models of Reading

All models of reading attempt to account for the essential elements thereof. As this survey has highlighted the prior importance of good lexical and comprehension Accessing Strategies for decoding meaning as well as proper perceptual Accessibility of any text, Gough's (1972) model was based on eye-fixation research findings. In his "One Second of Reading," Gough contrasted Vocal and Visual factors involved in fluent reading, which combined "Pattern recognition routines" with proper understanding of "Phonological rules" of English. Carver (1977-78) emphasized the role of internal articulation or vocalization of words, seeing reading as basically a process of phonological encoding. He did contribute the terms "rauding" and "auding" to mean reading with comprehension or listening with understanding. Barnett (1989, p. 18) also believed that Carver's model would be helpful "in determining how second and foreign language reading differ from first language reading. [FL / SL] readers frequently read material without understanding it, and the role of internal speech during second language reading is questionable." Clearly its role and the degree of language transfer, help or interference all need to be better investigated by such procedures as think-aloud protocols (Block, 1986) and post-reading retrospectives.

Although Goodman (1968) sought to explain reading as "psycho-linguistic guessing game," clearly the one with the most words wins the reading game, as Laufer wryly concluded (1997, 32). So developing CALL-enhanced ways to help learners build up their L2 receptive and productive vocabularies is urgent.

E. Interactive Models of Reading

Indeed, interactive models of reading are now widely accepted, and have become increasingly well known ever since Rumelhart first proposed one (1977). As Day and Bamford (1998: 12) characterize them, "The most widely accepted models of fluent first language reading posit an interaction of a variety of processes, beginning with the lightening-like, automatic recognition of words. This initial process of accurate, rapid, and automatic recognition of vocabulary frees the mind to use several simultaneous processes involving reasoning, knowledge of the world, and knowledge of the topic to construct meaning." This researcher agrees with their opinion that the abstract hypothetical constructs which opposed bottom-up (text-driven) to top-down (concept-driven) processing were once helpful theoretically. However, now that we realize that the process of fluent reading is not either-or, but rather an interactive combination of both kinds of processing, we had better not look at reading as limited to one or the other type of process. Rather, in Bamford and Day's words (1998:12), "it is probably better to leave [this top-down vs. bottom-up distinction] behind lest [it] unhelpfully polarize a description of how mental processes interact with text features in fluent reading comprehension."

Several key characteristics of the reading process are pointed out by Day and Bamford (1998: 12 - 20), in their comparison of first and second language reading development, and the role which extensive reading and vocabulary plays therein, and more recently by Loucky (2005c). Although Day & Bamford fail to mention Rumelhart's role in the development of interactive models, they draw upon many other sources, such as Adams (1990, 1994), Perfetti (1985), Samuels (1994), and Stanovich (1992). Their key points in summary are:

"**1) Reading begins with the accurate, swift, and automatic visual recognition of vocabulary, independent of the context in which it occurs.**" Here we have the notion of automaticity, which also shows why the use of rapid-access computerized dictionaries (CBDs) could be such an important missing link in the maximized development of SL / FL sight vocabulary.

"**2) Automatic recognition of a word allows lexical access.**" Stanovich (1992: 4) defined lexical access as the ability to automatically call up from one's memory "the word's meanings and its phonological representation." Bamford and Day (1998) point out why rapid lexical access and word recognition skills are so important in the reading process. It is because these seem to ride below the level of a reader's consciousness, yet have a critical role to play in both listening and reading comprehension. The more rapid, automatic and accurate one's word recognition and decoding skills become in any language, the more rapid and accurate can be their subsequent comprehension of any text, whether written or spoken discourse.

"**3) The phonological representations of the words in a sentence hold [them] in working memory long enough for comprehension to occur.**" This slow and inefficient lexical access helps to explain why low proficiency readers are, in Eskey's words (1973), "unsafe at any speed." Most cannot attain an adequate reading speed for smoothly comprehending L2 text because they lack the lexical accessing skills needed to do so. Low vocabulary level readers are low proficiency readers mainly because they take too long to process text. Since they cannot recognize enough words in a sentence at a fast enough speed, as Adams (1994: 857) put it, the beginning of the sentence will fade from memory before the end has been registered."

"**4) Comprehension draws on the reader's prior knowledge of the language, of the world, of text types, and of the topic.**" Coady (1979) also had a helpful model of reading, which shows that it consists of processing in at least three areas: 1) Background Knowledge, 2) Conceptual Schema, and 3) Processing Strategies. Using texts which are closer to the language learner's 1) Background knowledge, 2) Conceptual schemata, and 3) TL vocabulary and processing strategies level and prior lexical learning style will all aid them considerably in their comprehension tasks. Naturally, if too much of their time and attention is distracted by struggling with difficult vocabulary, or they are distracted by

unknown conceptual areas, learners will fail to focus on the task of comprehension. Samuels (1994: 821) pointed out that if a reader's attention is "directed at only one process at a time, the comprehension task is not getting done." This stands to reason as he says, since it is "slow, laborious, and frustrating" for low proficiency nonnative or native readers to have to continuously switch their attention back and forth from word decoding to meaning construction.

Schema theory which has guided much recent reading research looks at reader's existing concepts of the world into which they must try to integrate what they are reading from a text. In this sense reading is an interactive process between not only lower and higher level skills, but also between each reader's existing schemata, which provide a framework into which they try to fit new information, both lexical and conceptual. Clarifying the types and function of these schemata, Barnett (1989:42) writes that,

> According to advocates of this [schemata] theory, reading is an interactive process in which the author's perspective, points of view, allusions or arguments are all interpreted through the reader's experiences, perspective, cultural orientation, and biases (cf. Bernhardt, 1984). ... Readers have schemata, or concepts, relating not only to a text topic or context (*content schemata* or background knowledge) but also to text structure or rhetorical organization (*formal schemata*).

Bernhardt's (1986) Constructivist Model attempted to show text-based versus extra text-based components in L2 reconstruction of text meanings. Its six components are: 1) Word recognition, 2) Prior knowledge, 3) Phonemic-graphemic features, 4) Meta-cognition, 5) Syntactic feature recognition, and 6) Intra-textual perceptions. It is important for language education researchers to seek to analyze each of these components as well as their interaction, to more precisely analyze and explore how each component of her model operates in SL / FL reading development. As Barnett (1986:43-48) conceded,

> it can be hard to define exactly how schemata are operating in any particular act of comprehension. Furthermore, individual readers probably activate schemata differently, and to a greater or lesser extent. . . Interactive and multi-dimensional, these components work in a circular fashion and in different ways for individual readers reading particular texts. . . [Bernhardt's] model contains the aspects of the reading process researchers believe are determining factors: the look and sound of words, how they function in relation to each other, what they mean, and how the reader understands them and creates meaning from expectations and from reading the text as a whole.

F. Do Optimal Reading and Listening Levels Exist?

Akiyo Hirai (1999) did a study seeking to ascertain optimal levels of both reading and listening speed among English students in Japan. In seeking to compare "The Relationship between Listening and Reading Rates of Japanese EFL Learners," she found that he could not really estimate their optimal Listening Rates in most cases, since (p.367) "a majority of the less proficient learners in the study encountered considerable difficulty in listening comprehension." She attempted to measure both rates based on Carver's (1990) so-called "rauding theory," meaning reading with comprehension. Many reading researchers have mentioned the importance of developing some degree of automatic word decoding and meaning-processing skill for attaining more fluent reading. Few studies have been done to compare whether that process is the same in ESL as in EFL settings, however, much less *how much automaticity is needed* by second or foreign language readers, as opposed to native readers in a first language setting.

Several researchers, such as Eskey (1988), McLaughlin (1990), and Segalowitz (1991), as well as Day and Bamford (1998) in their recent text *on Extensive Reading in the Second language Classroom*, have made the same claims for the importance of such automaticity in SL/FL reading. Nevertheless little substantial research has yet been done to compare

its development, differences in L1 versus L2 readers' think-aloud protocols and mental processing, or automaticity's relative importance in second language settings, especially in EFL rather than ESL areas. This clearly needs to be done now.

Hirai (1999) has done a good job of clarifying this question, and the relationship between the related receptive skills of reading and listening, seeking to begin comparing rates of L1 and L2 learners where this is possible. She points out (pp.368-367) that word recognition may involve three main processes: "a) a pattern analysis of visual stimulus, b) some phonological recording, and c) lexical search on the basis of either the visual or phonological representations, or both." Explaining the phonological recording hypothesis of Rubenstein, Lewis and Rubenstein (1971), a string of letters is first converted into a string of sounds by sound-symbol correspondence (or grapheme-phoneme) rules. Then the mental lexicon is checked for any prior entries in memory of words that match this form and sound. If and when one is found, we say that a word has been "recognized or retrieved."

To further clarify the cognitive and linguistic processes involved in vocabulary learning, it is helpful to look at Hirai's characterization of the lexical comprehension process. He outlines an "Input versus Output Lexical Comprehension / Production Model for Oral and Written Modalities," based on de Bor, Paribakht, and Wesche's (1997) attempt to make a lexical processing model for the study of second language vocabulary acquisition. Summarizing Hirai's (1999, p.pp.368-367) insights,

> All of these studies strongly suggest that the cognitive processes involved in listening and comprehension are interdependent or that, at some points, they share a common route to reach comprehension .... Another important issue regarding processing rate is that speed of word recognition appears to be a crucial factor underlying fluent reading. The words in sentences must first be recognized, that is lexically accessed, so their meaning in the context of a sentence can be used to formulate the complete thought the author intended to communicate. Therefore, the speed at which words can be recognized has the potential to limit the rate at which all subsequent processes operate (Carver, 1990). A review of word recognition research suggests that word recognition speed is extremely important for fluent reading because it has consistently been shown that the ability to recognize words rapidly and accurately accounts for a good share of the variance not only in young readers, but also in proficient college readers (Adams, 1990; Cunningham, Stanovich, & Wilson 1990; Gough & Tunmer, 1986; Perfetti, 1985; Stanovich, 1986).

Many reading researchers have stressed the great importance of achieving or attaining automatic word processing skills, but few have had simple, workable plans of action or proven proposals for how these can be developed more quickly and effectively, both for ESL and EFL learners. These problems cannot be avoided any longer, but must be addressed now with the help of modern computerized language learning and translation technology. After her exemplary job reviewing lexical processing models, Hirai (1999, p.370) joins her voice to the many reading researchers who have emphasized the "importance of automatic lower-level processing in L2 contexts. Less proficient readers often appear to be word-bound... 'stuck' on words. Therefore, **Automaticity of lower-level processing skills seems to be a crucial factor that determines the reading rate of learners, and is closely related to their language proficiency.**"

Day and Bamford (1998, p. 18) sound plausible in asserting that "To allow this initially difficult and problematic process of guessing, learning and refining the knowledge of words from context, second language readers must read materials with a very low ratio of unknown to known words." However, it is clear from studies and much observation in EFL settings that any such "guessing, learning, and refining" is very incremental at best, and fraught with misreadings, confusion, and misunderstandings at worst. As Hulstijn (1992, p.122) found, in several studies of adult learners, "the retention of word

meanings in a true incidental learning task is very low indeed." That is also assuming that interpretations of word meanings from incidental encounters in extensive reading are even correct. Many words can be deceptively transparent, but actually be misread as words of similar form or sound. Thus a much more effective means of "crossing the vocabulary threshold," so to speak, must be found, especially for low vocabulary and language proficiency EFL learners (as shown in Loucky, 2002c) .

In addition, ESL or EFL teachers need proven instruments, tools and strategies with clear explanations so that they know exactly how to measure each individual language learner's vocabulary knowledge, both in receptive and active terms. They need clearly defined parameters of high frequency vocabulary, including collocational patterns, idiomatic and verbal phrases of high frequency which need to be taught first. Finally, they need to know specifically what text ratios are ideal to aim for, and clearly understand the difference between reading purposes and language processing tasks, so that they know when it is appropriate to use material at a learner's "Free- or Independent Level" as opposed to his "Instructional Level." Table 2 of this work can help to serve as a ready reference guide in determining levels to aim for in different language tasks.

Based on this researcher's testing of various computerized methods and media to enhance vocabulary acquisition, it is clear that not only **word accessing**, but other processes in the **attainment of meaning comprehension can also become better activated and more automated by the use of computerized dictionary, translation and assistive reading technology, along with more systematic methods using associative memory networks to speed up learning**. This is his basic contention, now undergoing systematic testing, and finding growing support with each new study. In addition, it is time to refute the idea that systematic vocabulary instruction necessarily means using decontextualized exercises. It is common knowledge that new words must be learned in context.

Cross-cultural studies have shown that the critical importance of automatic character processing skills seems to be true across languages, wherever studied so far. Researchers in Japan (Kuhara-Kojima, et al., 1996) found this to be true with kanji and hiragana characters, for example. OCR scanning machines and Text-to-Speech software that have already been developed in 53 languages have also found that these principles showing the importance of automatic recognition are true even for translation machines and software (See OCR online translation sites and web dictionaries, such as those 1,500 collected and organized at http: // www.call4all.us / home /_ all.php?fi = d). But just how important and how automatic do word recognition processes need to be for smooth meaning construction to take place among foreign language learners such like those in EFL settings as in Japan?

VI. CONCLUSIONS

It is clear from reading studies in various languages, that **automatic word decoding and lexical processing skills are a prerequisite for fluent reading comprehension**. Although some teachers and students have focused too much on reading as just a phonetic process of translating written symbols of a language into their corresponding sounds, and others focus overly on each individual word, **good readers are able to be meaning-centered. They develop rapid lower level processing skills needed for higher level reading and reasoning, required for smooth and unhindered comprehension of any text**. As Adams (1994: 840) characterizes this necessary ability, "Only to the extent that the ability to recognize and capture the meaning of print is rapid, effortless, and automatic can the reader have available the cognitive energy and resources on which true comprehension depends."

In this discussion of cognitive processing skills one must recognize **how important it is to develop rapid assessment tools**, and encourage language learners to use **rapid accessing computerized translation tools**. Despite six years of secondary school English, **most Japanese college students generally lack enough vocabulary** to be able to

process almost any text above a fourth grade level smoothly (See Loucky, 1996, 1997a; 2003c). In other words, **they lack both sufficient and efficient lexical accessing abilities**. This is their "lexical plight," in Laufer's (1997) words, characterized as the "beginner's paradox" by Coady (1997) and others.

Increased use of rapid access CBDs can most quickly help language learners who have limited lexical access on their own to overcome and reduce these obvious barriers of L2 texts that are too dense with unknown vocabulary for them to be processed smoothly by EFL learners. In this way their entry threshold level may be lowered somewhat, or at least instructional level materials can be processed much more pleasantly and easily. Frustration level materials should still be avoided, but even Instructional Level materials at one or two grade levels above their free-reading level can be made much more manageable for them in this way. Krashen's (1982) Input +1 hypothesis from a reading standpoint was really nothing new, since reading theory has long known that readers can handle textual input at about +1-2 grade levels higher than their Independent reading levels (See Ekwall, 1976; Loucky, 1994). How can input become comprehensible if the vocabulary is unknown? In Krashen's terms, 'casting a net' required a focus on meaning and not on form. He also defined (1982: 21) 'understand' as focusing on meaning and not form of a message. But for this to take place both new L2 word forms and meanings must be learned. Thus a more detailed model of nonnative reading and vocabulary acquisition is needed.

Only by careful individual diagnosis of each student's vocabulary, comprehension, and total estimated reading grade levels can ESL/EFL teachers really help their students to improve as fast and as much as possible. Otherwise, no one will ever really know their levels, nor their rates of improvement. Without appropriate means of assessing both lexical and comprehension skill, knowledge and strategy development no one will be able to tell if students have really learned, by how much, or how best to improve their L2 reading and overall language skills. Hatch and Brown (1995, p.374) helped to clarify five of the essential steps needed to learn any new words or phrases, which are included within this writer's eight-fold (Table 1) "Taxonomy of Essential Vocabulary Learning Strategies." These are 1) Encountering the new words or phrases, 2) Understanding the word's form, 3) Understanding the word's meaning, 4) Remembering or consolidating the word's form and meaning in memory, and 5) Using the word(s) actively, especially in one's speech or writing.

In addition to his eight-fold path to more rapid and intentional lexical development, the author proposed a five-step instructional method for informal or spontaneous teaching of new words. Seal (1991) proposed that the first three steps at least be covered even in informal teaching settings. There are 1) **Convey** the new word or phrase's meaning, 2) **Check** on its meaning, and 3) **Consolidate** the meaning. In addition to these helpful instructional principles, as much as time allows one should add two more steps: 4) **Clarify** the word's form and usage (grammatically, structurally, and socio-linguistically), and 5) **Connect** or help fix it within a learner's memory bank (via active, multi-sensory use, mnemonic devices and Semantic Field Keywords or Graphic Organizers, etc.). Generative or productive use by at least saying or writing target language word meanings and / forms within one original sentence has been found to greatly benefit long term memory (See Takefuta, 1999). **Activation (Step #6)** is a clear step in most methods, which generally show that productive use is also needed to move new TL forms from merely passive recognition into one's active vocabulary (See Nation, 1994b).

Having more clearly identified these most essential TL lexical processing steps, one can follow a procedure similar to that used when administering Vocabulary Knowledge Scales in two stages of "Receptive vs. Productive" ability. First one uses think-aloud protocols or written feedback with retrospective interviews to get self-reports from language learners as to the strategies they are using when encountering new words. Then after instruction

and practice in how to use these essential processing strategies, reassess how much learners are using them, and to what degree their use improves students' SL/FL lexical aquisition and retention rates, comparing both short- and long-term measures. The pilot study done recently (Loucky, 2004a and 2004 b) convinced this researcher of the benefits of this approach, especially when coupled with the use of Crow-Quigley's Semantic Field Keyword Approach (SFKA is explained and illustrated by the author's detailed online bilingual vocabulary development course located at http://www.call4all.us/misc/sfka.php), for the rapid expansion of L2 vocabulary among EFL students in Japanese colleges. Fluent reading is indeed a crucial basic skill needed by students to learn any language, since reading expands their other language skills--in listening, speaking and writing. Therefore, the importance of finding ways to teach more effective reading of both print and online texts based on the findings of vocabulary research should be further promoted and recognized among English teachers in Japan and around the world (as show at http://call4all.us///home/__all.php?fi=r).

References

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.

_____. (1994). Modeling the connections between word recognition and reading. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical models and processes of reading* (4th ed.) (pp.838-863). Newark, DE: International Reading Association.

Alderson, Charles. (2000). *Accessing reading*. Cambridge: Cambridge University Press

Barnett, Marva A. (1989). *More than meets the eye: Foreign language reading theory and practice*. Englewood Cliffs, NJ: Prentice Hall Regents.

Bernhardt, E.B. (1984). Toward an information processing perspective in foreign language reading. *Modern Language Journal* 68 (4), 322-31.

_____. (1986). A model of L2 text reconstruction: The recall of literary text by learners of German. In A. Labarca (Ed.), *Issues in L2: Theory as practice, practice as theory*. Norwood:Ablex.

Block, E. (1986). The comprehension strategies of second language readers. *TESOL Quarterly*, 20 (3): 463-494.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., and Kratwohl, D. R. (eds.) (1956). *Taxonomy of educational objectives: cognitive domain*. New York: David McKay.

Carrell, P.L., Devine, J., & Eskey, D.E. (1988). (Eds.). *Interactive approaches to second language reading*. Cambridge: Cambridge University Press.

Carver, R. (1977-78). Toward a theory of reading comprehension and rauding. *Reading Research Quarterly*, 13, 8-64.

Chall, J. S. (1958). *Readability-an appraisal of research and application*. Columbus, OH: Bureau of Educational Research, Ohio State University.

Coady, James. (1979). A psycholinguistic model of the ESL reader. *Reading in a Second Language: Hypotheses, Organization, and Practice Reading*. (Ed.), R. B. Mackay, B. Barkman, and R. R. Jordan. Rowley, Mass: Newbury House.

Cunningham, James, and Fitzgerald, Jill. (1996). Epistemology and reading. *Reading Research Quarterly*, Vol, 31, No. 1, (Jan-March), pp. 36-61.

Cunningham, Stanovich, and Wilson. (1990). Cognitive variation in adult college students differing in reading ability. In T. Carr & B. Levy (Eds.), *Reading and its development skills approaches* (pp. 129-159). San Diego: Academic Press.

Day, Richard R. and Bamford, Julian. (1998). *Extensive reading in the second language classroom*. Cambridge: Cambridge University Press.

de Bot, K., Paribakht, T. S., & Wesche, M. B. (1997). Toward a lexical processing model for the study of second language vocabulary acquisition: Evidence from ESL reading. *Studies in Second Language Acquisition*, 19, 309-329.

Duffey, G. G., Roehler, L. R., Sivan, E., Rackcilffe, G., Book, C., Meloth, M. S., Vavrus, L. G., Wesselman, R., Putnam, J., and Bassiri, D. (1987). Effects of explaining the reasoning associated with using reading strategies. *Reading Research Quarterly*, XXII (3), 347-368.

Ekwall, Eldon E. (1976). *Diagnosis and remediation of the disabled reader*. Boston: Allyn and Bacon.

Eskey, D.E. (1973). A model program for teaching advanced reading to students of English as a second language. Language Learning, 23, (2), 169-84. (Reprinted in R. Mackay, B. Barkman, & R. R. Jordan (Eds.), *Reading in a second language: Hypotheses, organization and practice*. (pp.66-78). Rowley, MA: Newbury House.

Eskey, D. E. (1988). Holding in the bottom: An interactive approach to the language problems of second language readers. In P.L. Carrell, J. Devine, D. E. Eskey (Eds.), *Interactive approaches to second language reading* (pp. 03-100). Cambridge: Cambridge University Press.

Goodman, K. S. (1968). *The psycholinguistic nature of the reading process*. Detroit: Wayne State University Press.

Gough, P. B. (1972). 'One second of reading.' In J. F. Kavanagh & I. G. Mattingly (Eds.), *Language by ear and by eye* (pp.331-358). Cambridge, MA: MIT Press.

Gough, P. B., and Tunmer, W. (1986). Decoding, reading and reading disability. *Remedial and Special Education*, 7, 6-10.

Grabe, William. (1988). Reassessing the term 'interactive.' In P. L. Carrell, J. Devine, & D. E. Eskey (Eds.), *Interactive approaches to second language reading*. (pp. 56-70). Cambridge: Cambridge University Press.

Guest, Michael. (2000). Which words? A comparison of learner and teacher choices for lexical study. *JALT Journal*, Vol. 22 (1), pp. 165-182.

Hatch, Evelyn, and Brown, Cheryl. (1995). *Vocabulary, Semantics, and Language Education*. Cambridge: Cambridge University Press.

Hirai, Akiyo. (1999). The relationship between listening and reading rates of Japanese EFL learners. *Modern Language Journal*, 83 (iii), 367-384.

Hulstijn, Jan. (1992). Retention of inferred and given word meanings: Experiments in incidental learning. In P.J.L. Arnaud & H. Bejoint (Eds.), *Vocabulary and Applied Linguistics* (pp. 113-135). Basingstoke: Macmillan.

Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. New York: Longman.

Kuhara-Kojima, K., Hatano, G., Saito, H., & Haebara, T. (1996). Vocalization latencies of skilled and less skilled comprehenders for words written in hiragana and kanji. *Reading Research Quarterly* 31 (2), 158-171.

Laufer, B. & Hadar, L.(1997). Assessing the effectiveness of monolingual, bilingual and "bilingualized" dictionaries in the comprehension and production of new words. *Modern Language Journal*, 81. 189-196.

Loucky, J. P. (1994). Teaching and testing English reading skills of Japanese college students. *KASELE Kiyo* 22: 29-34.

_____. (1996). Developing and testing vocabulary training methods and materials for Japanese college students studying English as a foreign language. Ed. D. Dissertation on file with Pensacola Christian College, Pensacola, FL. Also available either from ERIC Center for Applied Linguistics via fax to (202) 429- 9292; or from UMI Dissertation Services, 30 No. Zeeb Rd., PO Box 1346, Ann Arbor, MI 48106-1346 (**http.// www.umi.com**).

_____. (1997a). "Maximizing vocabulary acquisition: Recommendations for improving English vocabulary learning for foreign language learners." *KASELE Kiyo* 25: 101-111.

_____. (1997b). Summary of 'Developing and testing vocabulary training methods and materials for Japanese college students studying English as a foreign language.' *Annual Review of English Learning and Teaching*, No 2, JACET Kyushu-Okinawa Chapter. (9/30/97: 15-36).

_____. (1998). Suggestions for improving ESL / EFL vocabulary instruction. *Seinan JoGakuin Kiyo* 45.

_____. (2002a). Assessing the potential of computerized bilingual dictionaries for enhancing English vocabulary learning. In Lewis, P.N.D. (Ed.), *The changing face of CALL: A Japanese perspective* (pp. 123-137). Lisse: Swets & Zeitlinger.

_____. (2002b). Comparing translation software and OCR reading pens. On Swanson, M., McMurray, D., & Lane, K. (Eds.), *Pan-Asian Conference 3 at 27th International Conference of JALT, National Conference Proceedings CD*. Kitakyushu, JAPAN. Pages 745-755.

_____. (2002c). When Eastern Oriental meets Western Occidental language system: Crossing the English vocabulary threshold versus breaking the Kanji Barrier. *Seinan JoGakuin Tandai Kiyo*, No. 48, pp.19-38.

_____. (2003a). Improving access to target vocabulary using computerized bilingual dictionaries. *ReCALL 14* (2), pp.293-312. Cambridge: Cambridge University Press.

_____. (2003b). Using computerized bilingual dictionaries to help maximize English vocabulary learning at Japanese colleges. *CALICO Journal*. September Issue.

_____. (2003c). Testing vocabulary levels in Japan, Part II. *The Japanese Learner*, No. 29, (March), pp.15-20. Oxford: Oxford University.

_____. (2004a). Clarifying and resurrecting the Semantic Field Keyword Approach for rapid lexical acquisition: Employing semantic organization, bilingual computerized glosses and pushed output generation to enhance L2 vocabulary learning. *Seinan JoGakuin Tandai Kiyo*, No. 50, 61-87.

_____. (2004b). Improving cognitive, linguistic and computational processing of new vocabulary using an online Semantic Field Keyword Approach. Japan Association of Language Teachers CALL Special Interest Group, *C@lling Japan*. Spring 2004, Vol. 12/1, pp. 7-20.

_____. (2005a). Combining beneficial strategies from both intensive and extensive reading approaches for more effective and enjoyable language learning. *JALT* 2004 *Conference Proceedings*. 1-15.

_____. (2005b) Making a user-friendly Vocabulary Knowledge Scale for Japanese students: Designing and testing a Dual Assessment Vocabulary Instructor-Evaluator. Kitakyushu: *Orio Aishin Tanki Daigaku Ronshu*, No. 39, 33-86.

_____. (2005c). Systematically employing a trinity of user-friendly assessment tools. *JLTA Journal*, No. 7, 66-91.

_____. (2006). Finding better ways to systematically maximize lexical acquisition by using a depth of lexical processing taxonomy, CALL resources, and effective strategies. *CALICO Journal*, 23, Volume 24 (1). (January 2006).

Munby, J. (1978). *Communicative syllabus design*. Cambridge: Cambridge University Press. Nation, Paul, (Ed.). (1994a). *New ways in teaching vocabulary*. Alexandria, VA: TESOL, Inc.

_____. (1994b). "Vocabulary learning through spoken use." Handout for Eighth Japan Association of Applied Linguistics, JACET National Research Meeting. Tokyo: December, 1994.

North, B., and Schneider, G. (1998). Scaling descriptors for language proficiency scales. *Language Testing* 15 (2), 217-262.

Perfetti, C.A. (1985). *Reading ability*. NY: Oxford University Press.

Paribakht, T. & Wesche, M. (1993). The relationship between reading comprehension and second language development in a comprehension-based ESL program. *TESL Canada Journal*, 11 (1) , 9-29.

Quickionary. Wizcom Technologies Limited. Assistive Reading Pen that scans, translates and Pronounces. Available from **www.wizcompjapan.com**.

Quigley, Ruth. (1986). A Semantic Field Approach to passive vocabulary acquisition for advanced second language learners. MA Thesis at North Texas State, under John Crow.

Rubenstein, H., Lewis, S. S., & Rubenstein, M. A. (1991). Evidence for phonemic recoding in visual word recognition. *Journal of Verbal Learning and Verbal Behavior*, 10, 645-657.

Rumelhart, (1977). Toward an interactive model of reading. In S. Dornic (Ed.), *Attention and Performance VI* (pp. 573-603). Hillsdale, NJ: Erlaum.

Samuels, S.J. (1994). Toward a theory of automatic information processing in reading, revisited. In R.D. Ruddell, & H. Singer (Eds.), *Theoretical models and processes of reading* (4th ed.), (pp. 816-837). Newark, DE: International Reading Association.

Seal, B. (1991). Vocabulary learning and teaching. In M. Celce-Murcia (Ed.), *Teaching English as a foreign or second language* 2nd ed. (pp. 296-312). New York: Newbury House.

Segalowitz, D. (1991). Does advanced skill in a second language reduce automaticity in the first language? *Language Learning*, 41, 59-83.

Silvaroli, Nicholas. (1965-73). *Classroom Reading Inventory*. Dubuque, Iowa: W. C. Brown.

Stanovich, K. E. (1992). The psychology of reading: Evolutionary and revolutionary developments. In W. Grabe (Ed.), *Annual Review of Applied Linguistics*, 12 (pp. 3-30), Cambridge: CUP.

Takefuta, Junko. (1999). Three types of CALL courseware developed for teaching vocabulary to Japanese college students. In *JACET Bulletin*, No. 30, 103-118. Tokyo: JACET.

Zimmerman, Cheryl Boyd (1997). Historical trends in second language vocabulary instruction. In Coady, J, and T. Huckin. *Second language Vocabulary Acquisition: A rationale for Pedagogy*. Cambridge: Cambridge University Press. pp. 5-19.

Appendix:

Japanese College Students' Use of 8-Fold Depth of Lexical Processing Scale

Class Profiles **(U= Use this step; UF= Think it may be Useful)**

Group 1: n=19 (1 Female, 18 Males in Period 1 at XIT Engineering University)
Group 2: n=20 (5 Females, 15 Males in Period 2 at XIT Engineering University)
Group 3: n=24 (4 Females, 20 Males in Period 3 at XIT Engineering University)
Total N= 63 (10 Females, 53 Males)

DLP#	**Phase1 Use/**	**2**	**3**	**4**
CLASS:	**Useful**	**U/UF**	**U/UF**	**U/UF**
Per 1 Ave				
* VL=4.2	11; 16	9; 17	8; 18	6; 10
Per 2;				
VL=3.9	7; 10	8; 14	11; 16	4; 11
Per 3;				
VL=3.6	8; 17	18; 19	11; 20	12; 6
Totals/63	26; 43 Use/ Useful	35; 50 Use/ Useful	30; 54 Use/ Useful	22; 27 Use/ Useful
Total Percents	41.27%; 68.25%	55.55%; 79.36%	47.62%; 85.71%	34.92%; 42.86%

* VL=Vocabulary Level, class average relative to U. S. native norms
Total N= 63 **(U= Use this step; UF= Think it may be Useful)**

PHASE #	**Phase 1**	**2**	**3**	**4**
Lexical Processing Phase:	**Assess:** Evaluate Words Known	**Access:** Connect Confirm Meaning	**Archive:** Keep Records Clearly	**Analyze**: Separate by Root & Parts
DLP#	**5**	**6**	**7**	**8**
CLASS:	**U/UF**	**U/UF**	**U/UF**	**U/UF**
Per 1: VL=4.2	5; 12	5; 16	4; 15	7; 13
Per 2; VL=3.9	6; 12	1; 13	3; 9	3; 8
Per 3; VL=3.6	10; 18	13; 21	1; 21	2; 11
Totals/63	21; 42	19; 50	8; 45	12; 32
Total Percents	33.33%; 66.67%	30.16%; 79.36%	12.7%; 71.43%	19.05%; 50.79%
PHASE #:	**5**	**6**	**7**	**8**
Lexical Processing Phase:	**Associate** Group or Organize; Keywords	**Activate** Always Practice Using	**Anchor** Fix with Memory Tricks	**Reassess** **Review** **Recycle** (Study!)

1	2	3	4	5	6	7	8
Assess: Make Chances to Learn	Access: Try to Always Look up	Archive: Keep Records Clearly	Analyze: Separate by Root & Parts	Associate: Group under a Keyword	Activate: Always Practice Using	Anchor: Fix with Memory Tricks	Reassess Review Recycle (Study!)

外国語語彙学習作戦の分類学

ジョン・P・ラオキ

＜要　旨＞

Ｌ１及びＬ２の語彙獲得、発達の分野における文献の検討及び日本の九州の７つの大学で研究してきた著者（Loucky, 1996－現在）によると、語彙学習の最も重要な８つのステップ、スキル、作戦に分けて分析することができる。

言語学習者を教える際、この８つの重要な分類作戦シリーズを如何に組織化し適用するかということが語彙及び言語発達を最大にするのを助ける最も有効な方法の一つである。この８つの分類作戦シリーズを循環的に用いている〝外国語語彙学習作戦の分類学〟は下記に説明されている。表１は語彙学習過程においてこの８つの分類作戦を用いて教え、テストし、分析した結果、日本の大学生が外国語としての英語学習をする際に最も効果的であることが分かった。

キーワード：Vocabulary learning strategies / knowledge scales; Lexical processing taxonomy