Introduction
Of the four language skills associated with learning English, a review of English language curriculums at many Japanese universities reveals that writing often receives less focus than grammar, speaking, and reading, except in the context of translation. As a native speaker of English teaching speaking and writing courses at Japanese universities, I have observed patterns of errors that occur every year. Although teachers typically correct written assignments and return them to students, many students persist in making the same errors in subsequent written assignments and on tests. This occurs partially because students are used to a passive learning style and many do not have a learning strategy for correcting their own errors and partially because they do not have an effective learning strategy for remembering the correct information. This recurring situation led me to hypothesize that Japanese university students’ writing abilities would improve more quickly by developing a process for explicitly noticing their errors, documenting them, and memorizing the correct versions of their errors. This research outlines eleven categories of errors detected in the writing assignments of English communication majors and introduces how using the peg word memory technique and acronyms can help students improve the accuracy and naturalness of their written English.

Literature Review
Definitions of memorization can be found in dictionaries and academic studies. The Oxford Advanced Learner’s Dictionary (2005) explains memorizing as a process of learning something carefully so that one will be able to remember it exactly. In a language learning context, Richards, Platt, and Platt (1992, p. 226) refer to memorizing as “…the process of establishing information in memory.” They used the term “memorizing” to refer to the conscious processes of cementing new knowledge or information into the mind and making it available for use at a later time. In their conception, learners use memorization consciously and they think about the process of memorization when they are applying it. O’Malley and Chamot’s (1990) rehearsal strategy is a cognitive learning strategy similar to that of Richards, et al. Based on the positive results gained from applying memorization and rehearsal strategies, memory techniques that require students to review previously learned materials will benefit their learning and recall.
However, memorization in teaching English as a foreign language has received mixed reviews. Gilfert and Crocker (1997) explain that most Japanese junior and senior high school English programs require students to memorize basic English sentence patterns and subsequently practice applying the patterns to Japanese sentences. They criticized the practice because students are rarely taught how to relate one sentence to another or how to build original coherent arguments or ideas in English. In that sense, memorization fails to assist students in originating correct English sentences. Tsumura (2005) cautions that for Japanese children learning English, memorizing grammar rules leads to mistakes such as improper use of past tense of verbs, for example, “goed” instead of “went” or “buied” instead of “bought.” Such patterns learned in childhood can become fossilized and difficult to correct later on. Therefore, when foreign language teachers use memorization strategies, they should try to anticipate unexpected negative consequences.

In contrast, Li (2004) showed results in support of memorization for learning English as a foreign language. Li showed statistical results from both Chinese students and teachers who claim that “rote learning” or memorization is part of their cultural heritage. They value using memorization for learning English vocabulary and grammar patterns because it is how they learn their mother tongue. Tsumura (2005) agrees that memorizing is useful for Japanese adults to logically learn grammar rules. This technique works for them because they know that all languages have rules, including their first language. Since they are accustomed to this method, it is effective for them. Since both the Chinese and Japanese are kanji based languages, it seems that memorization methods would also apply to Japanese learners of English.

Regardless of their culture, other researchers focused on the benefits of memorization as a behavior or learning strategy to assist students. Ehrman and Oxford (1990) focused on which type of students would typically benefit from memory strategies. They conducted a study of seventy-nine foreign language learners at a U.S. government language institute. They administered the Strategy Inventory for Language Learning (SILL) (Oxford, 1990) which uses the Myers-Briggs Type Indicator (Myers, 1962) to determine the extent to which learners use memory, social, cognitive, metacognitive, and affective strategies, depending on their styles of functioning. The four Myers-Briggs styles are introversion versus extroversion, sensing versus intuition, thinking versus feeling, and judging versus perceiving. Ehrman and Oxford (1990) found that sensing (step-by-step) learners preferred memory strategies, while intuitive (mental model) learners liked compensation strategies. Extroverts tended to use more social strategies than introverts. Thinkers preferred metacognitive strategies while feelers rejected them in favor of social strategies; and perceivers (open learners) liked affective strategies whereas judgers (closure-oriented learners) rejected them. Although SILL (Oxford, 1990) and Myers-Briggs (Myers, 1962) were not included in the research design being reported here, it is the author’s judgment that many of the students in the study were sensing-type learners rather than intuitives and introverts rather than extroverts.

From the learner strategy perspective, Cotterall and Reiders (2004) emphasize the benefit of learners’
strategies as specific actions that learners use to make learning easier, faster, more enjoyable, and more self-directed. They emphasize that learner strategies make studying language more effective and easier to transfer to new situations. Based on informal student comments about hating English, it is not uncommon for Japanese university students to become disillusioned about not being more advanced in English after studying for six years in junior high school and high school. Therefore, English language teachers should consider introducing strategies to learners that can make learning English easier and more effective.

Ferris (2002) searched for such strategies to make learning to write in a foreign language easier and more effective. In an exhaustive review of writing and error correction for non-native English speakers, she supports the use of noticing, memorizing, and using specially designed writing activities to help students learn from their writing errors. She specifically supports having teachers review mechanical errors with students one-on-one as well as peer review sessions where students can point out errors to their classmates in a non-threatening way. In these ways, students have chances to notice their errors, discuss them, and make sure that they are clear on how to eliminate their errors in future writing assignments.

With the same aim as Ferris (2002), but a different approach, Abu-Rabia (2003) investigated the working memory processing and storage functions of high school students in Iran who were learning English as a foreign language. He determined that working memory functions the same in writing as it does in reading, which supports the claim that assisting students to develop and use their working memories more effectively will help them to improve their writing skills. Yates (1966), who founded the company Memory Joggers, conducted research for more than fifteen years on how to enhance student learning by using memory techniques. She concludes that when students learn how to enhance their memory functions, their writing abilities improve.

L2 English learners use memorization in various ways including learning new vocabulary, key phrases for oral and written communication, and doing grammar exercises correctly according to Adamson (1990), Cook (1994), Kovecses and Szabo (1995) and Duong (2003). All of these researchers found positive learning effects for students who memorized English words, phrases, and sentences and they consider memorization a worthwhile L2 learning strategy.

Based on the positive results obtained by researchers mentioned above, it appears that using specific memory techniques is likely to aid students in developing their writing skills. According to Duong (2003), some language teachers contend that mindless memorization of materials for the purpose of passing a test rather than to consciously make language available for communication is not useful for students. However, memorization used properly has been shown to strengthen a learner’s attention to the language being learned and helps students to focus during rehearsal activities. The repetition required during rehearsal creates stronger mental paths in the brain and it is that linkage that enables students to
recall L2 language when it is needed.

In exploring the issue of "good" versus "bad" memorization techniques, Duong (2003) conducted questionnaires among L2 English learners at Victoria University of Wellington, New Zealand. Results of the study revealed that some learners, especially Chinese and Korean learners, believe that memorization is a normal practice in learning English and they want to learn ways to achieve "good memorization." Students who memorize seem more likely to internalize what they have learned. As a result, they are able to sound more natural when they speak. Adamson (1990) reported that after memorizing phrases and sentences for oral reports, students were able to give reports by occasionally looking at notes rather than reading the entire written paper. Cook (1994) reported that as students repeated phrases and sentences many times, the language began to make sense to them and could be recalled with less conscious effort.

Duong and Nguyen (2006) conducted questionnaires among L2 language learning students and teachers about the effects of memorization on writing. Their results showed that 96% of student participants stated that they used memorization as a strategy to learn vocabulary, 76% for grammar structures, 67% for idioms and 64% for English phrases (Duong and Nguyen, 2006, p.7). Among the teachers, 85% claimed that students needed memorization to learn vocabulary and grammar structures, and 70% thought it was needed to learn idioms and phrases. Thirty-five percent of the teachers recommended memorizing whole sentences, but only 10% of students found this useful.

Because of the positive results reported by the studies mentioned above, I chose to conduct in-class research to determine if the peg word memory technique and acronyms could help Japanese university students to improve their writing.

**Research Method**

The method used in this research project was to have a class of Japanese second-year L2 English Communication majors (N=25) make a portfolio of their corrected writing assignments during the 15-week 2009 spring term. Students individually compiled their own writing guides with error corrections, and applied the peg word and acronym memory techniques to help them remember correct English on future writing assignments.

At the beginning of the spring 2009 term, students were taught the peg word and acronym memory techniques. The peg word system works as follows. Initially, students memorize a list of words that correspond with the numbers 1 to 10. Those words are the so-called pegs of the memory technique. The same pegs can be used repeatedly to memorize a variety of lists. After creating the peg system, words or information that the student wants to remember are visually "attached" to a peg on the peg system by visualizing a picture of what they want to remember.

Although there are many variations of peg systems that could be used, such as peg words that rhyme
with the associated numbers (one is a gun, two is a shoe). I created a visual association peg word system using images which are familiar to the Japanese learners for this study. Each number 1 through 10 was assigned a visual image as follows.

1 is tree  
2 is light switch  
3 is a pyramid  
4 is a car  
5 is a glove  
6 is pistol  
7 is dice  
8 is a octopus  
9 is a fox  
10 is eggs  

Students visualized and memorized the peg word system. After the peg word system has been visualized and memorized, students learned to attach words or items that they wanted to remember to the peg words. Visualizing pictures instead of trying to recall words or numbers is a more effective method to help the mind recall the information attached to the peg list. Action, smell, sound, pain, and other physical sensations are also effective as memory aids when using the peg word system. An example of how to remember a 10-item grocery list is included in Appendix 1.

The peg word system is a documented technique that can be used for memorizing lists of language or information. The origin of the peg word system dates back to ancient Greece and Rome. It is a type of loci method, loci being the plural of the Latin word for place or location. A location to "store" information is chosen and a spatial relation developed which establishes an order that aids recollection of memorized content. The "method of loci" is described by Yates (1966), O'Keefe and Nadel (1978), and Luria (1987). Its effectiveness has been documented by Ross and Lawrence (1968); Crovitz (1969); Briggs, Crovitz, and Lawrence (1970), Briggs (1973), and Lea (1975).

In addition to applying this type of memory technique, rehearsal (review) of corrected errors is useful because students are using more than one learning style. They have written, read, re-stated, and reviewed the errors and corrected patterns several times.

Students were also taught how to make and use acronyms. In this method, students made a word or phrase out of the first letters or sounds of each word in the sentence. One well known example of using acronyms for leaning is HOMES, which is used remember the names of the five Great Lakes in the United States. The first letter of each lake is listed and the put in order to form the word "homes."
In mid-term, blank writing guides with three columns were distributed to students. Column 1 was to be used for entering incorrect words, phrases, or sentences, column 2 was for the corrected versions, and column 3 was for notes and memory aids. Students’ notes included memory cues for how to remember the correct grammar or sentence pattern. After students received their corrected writing assignments, they individually reviewed the comments and corrections written by the teacher. They were instructed to write the incorrect word, phrase or sentence and the corrected version with notes (in English or Japanese) concerning their errors. Subsequently, students were instructed to use the peg word method or acronyms to assist them in remembering the correct version of what they had written.

**Research Results**

A total of 150 writing samples were collected during the 2009 spring term. Students’ writing guides were collected twice and analyzed. Errors were tabulated into categories. After applying memory techniques to the errors listed in their first writing guides, students were able to reduce the number of errors by category in the second writing guide examination period. Following are the results of the writing guide analysis. Errors were assigned to eleven categories, as can be seen in Chart 1.

<table>
<thead>
<tr>
<th>Category</th>
<th>1st</th>
<th>2nd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect verb tense</td>
<td>23%</td>
<td>15%</td>
</tr>
<tr>
<td>Incorrect vocabulary</td>
<td>18%</td>
<td>10%</td>
</tr>
<tr>
<td>Incorrect or missing prepositions</td>
<td>14%</td>
<td>8%</td>
</tr>
<tr>
<td>Incorrect or missing articles</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td>Incorrect subject-verb agreement</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>Incorrect or missing subject</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Unintelligible sentence structure</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Missing verbs</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Incorrect or missing pronouns</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Incorrect or missing possessives</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>Incorrect or missing objects</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

In examining and correcting the first half of the writing samples, the majority of the errors were small when read one by one, however, when each sentence in a paper has errors, gradually comprehending the meaning can become difficult. In the above column marked 1st, 23% of all the errors were incorrect verb tense errors ("They be {are} in love with men."). The next highest group of errors (18%) were incorrect vocabulary errors where students chose a word(s) that made it difficult to understand what the writer
wanted to say ("I didn’t go to the lot of people, I eat properly food." [It is advisable to avoid going where there are a lot of people and to eat properly]). Fourteen percent of the errors were incorrect or missing prepositions ("I want {to} become a translator.") while 12% had incorrect or missing articles ("I left my homework on {the} table at the home."). A smaller percentage of the errors (10%) used incorrect subject-verb agreement ("They goes {They go} abroad to do an internship."") Missing subjects totaled 5% of all errors ("Separate a garbage." [You should separate your garbage."]) There were three categories of errors that totaled 4% respectively, totally unintelligible sentences, ("When I childhood days, spent a happy times almost in Grandmother at Nagano."), incorrect or missing verbs ("I was read about European language of billboard in interest." [I read about European language on the bulletin board.]), and incorrect or missing pronouns ("I have a few questions about the classes for Smith {for you}"). The smallest group of errors, 3% respectively, were for incorrect or missing possessives ("I am interested in an internship with {your} company.") and incorrect or missing sentence objects ("I don’t want to go him far away. {I don’t want him to go far away;}.").

In order to compare the results of the second examination of writing guides, I counted the number of errors in each category and calculated them as if the total number of errors had been the same as the first examination. By using this method, I was able to see if there were any reductions in the type of errors from the first examination of writing guides to the second examination after students began using memory techniques to improve their recall of corrected errors. The results in the 2nd column of Chart 1 do not total 100%, but show the comparison of errors before and after using memory techniques. Based on this method, there were 8% fewer verb tense errors and incorrect vocabulary errors, respectively; 6% fewer incorrect or missing prepositions; and 3% fewer incorrect or missing articles and incorrect subject-verb agreement usages, respectively. There were 2% fewer incorrect or missing subjects, missing verbs, incorrect or missing pronouns, incorrect or missing possessives, and incorrect or missing objects, respectively. The smallest decrease was in the number of unintelligible sentences, a 1% reduction.

Discussion
Because there were reductions in errors of all eleven categories between the pre-memory technique and post-memory technique samples, the peg word system and the use of acronyms that students applied had a positive impact on their English writing skills. Although, I cannot say conclusively since the study did not have a control group that used no memory techniques to compare with, based on student comments, memory techniques were useful in helping them to improve their writing skills. Also, based on studies conducted by other researchers, it is plausible that these techniques were helpful.

For future research, a control group needs to be set up that does not use memory techniques and a pre- and post-class questionnaire should be administered to document student feedback on their learning experience.
The following are examples of how students used the peg word system to remember correct English that they had previously written incorrectly.

<table>
<thead>
<tr>
<th>Incorrect</th>
<th>Correct</th>
<th>Peg Word Memory Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>I speak Germany.</td>
<td>I speak German.</td>
<td>Picture the tree with one person (German) in the tree eating an apple and the other person (Germany) falling to the ground and hitting his “knee” (“ny” is the phonetic sound for “knee”).</td>
</tr>
<tr>
<td>She is high school student.</td>
<td>She is a high school student.</td>
<td>Picture the light switch with a high school student wearing a sweater with a big, red capital A on her back.</td>
</tr>
<tr>
<td>You want say what?</td>
<td>You want to say what?</td>
<td>Picture the pyramid with a large number 2 speaking to you, “You want 2 say what?”</td>
</tr>
<tr>
<td>My family is four.</td>
<td>There are four people in my family.</td>
<td>Picture the car with 4 year old children inside and a large X drawn across the whole car.</td>
</tr>
<tr>
<td>Cat name is Kaoru.</td>
<td>My cat’s name is Kaoru.</td>
<td>Picture the glove with the words “my” printed on the back. The glove is petting a cat.</td>
</tr>
<tr>
<td>During Golden Week, I’m going to part time job.</td>
<td>During Golden Week, I’m going to work at my part time job.</td>
<td>Picture the gun. When you pull the trigger, the words “work at” pop out.</td>
</tr>
<tr>
<td>I want to step up cooking.</td>
<td>I want to improve my cooking.</td>
<td>Picture the dice. Picture throwing the dice and they land on the word “improve.”</td>
</tr>
</tbody>
</table>

There is no right or wrong picture or image that students should use. It becomes enjoyable for them to imagine images that help them to recall English correctly. Also, it gives them a definite process to apply and it can be used in other classes as well.

In order for the memory technique to be effective, students must mentally review or rehearse their images at the end of class (preferably within one hour), the following day, and the next week (Ebbinghaus, 1885/1913). As a general rule, people forget more, on the average, during the first hour after learning that during the next 24 hours; and during the first day than during the next thirty days. Whatever is left after thirty days time, will probably be remembered without much further loss for years to come (Pauk, 1974). This review process will move the learned information from working memory to short-term memory to long-term memory. It is also helpful for students to review images in order from first to last, then from last to first, and finally in random order to avoid serial learning. Therefore, “…the associative threads, which hold together a remembered series are spun not merely between each member and its immediate successor, but beyond intervening members to every member which stands to it in any close temporal relation” (Ebbinghaus, 1885/1913, p. 94.)

Some students preferred to use acronyms instead of the peg word method. After learning both techniques, students were free to use the method they found easier or more effective. Data on which
method students used and whether some students did not use either strategy has not been analyzed to date. However, below is an example of a student application of the acronym technique.

Incorrect sentence      Correct sentence
I become to twenty.      I will become twenty.

Acronym = I Was Blue Today (IWBT) and the student pictured herself as a startling, bright shade of blue.

I = I
Was = will
Blue = become
Today = twenty

Some students questioned whether it is necessary to memorize a new sentence to make the original sentence easier to remember. According to cognitive neuroscience specialists, it is useful. Tolman (1948) and O’Keefe and Nadel (1978) studied the section of the brain called the hippocampus. These researchers determined that the hippocampus is the core of the neural memory system which provides a spatial framework for memory and recall. This system in the hippocampus allows people to store and recall memories and events in life. Although it has still not been proven how this mechanism works, experiments have demonstrated that often nonsensical, painful, or exaggerated items are recalled easier and longer than real, every day images and events because a new memory pathway is created in the brain. For example, at the word level, if a person is trying to remember to buy eggs at the grocery store, imagining the feeling of walking barefooted with broken eggs oozing between your toes is more memorable than imagining holding a regular whole egg in your hand. At the sentence level, an effective acronym could be one that spelled a known word in either L1 or L2 or a combination of L1 and L2. The key is that the student herself invents the image. For example, one student wanted to remember the sentence pattern “I want to improve my cooking.” She made up the acronym “iwato ima Mako.” She imagined a large stone door with her friend Mako pounding on it with her fist (岩ドア今真子).

い = I
わ = want
と = to
いま = improve
ま = my
こ = cooking

Although this acronym is nonsense and meaningless to anyone else, because it had meaning to her and she established a memory path, she could remember the sentence pattern. If the student remembers one sentence pattern “I want to improve my…,” she can easily substitute other words to complete the sentence such as “English skills,” “dancing,” “speaking,” “looks,” etc. Creating images that are striking
allows students to recall the correct pattern of a sentence where just trying to use rote memory to remember the sentence pattern fails.

**Conclusion**

Not only did the use of peg word systems and acronyms assist students in this study to improve their recall of correct grammatical patterns, phrases, sentence patterns, and vocabulary, the techniques are taught as metacognitive techniques in learning courses throughout the world including the US, Russia, Germany, Great Britain, and Iran. The two-step approach of linking key ideas that the student wants to learn with an established spatial system in the brain and reviewing it after one hour, one day and one week is the same as the system used in this study. If this pattern of learning is continued, students are likely to experience better recall and improvement in writing in English or any other foreign language they are attempting to learn.

**References**


Appendix 1

**Application of Peg Word System for Shopping**

1 - apples  picture a tree covered with big, juicy apples
2 - butter  picture turning on the light switch with a stick of butter
3 - razor blades  picture a pyramid made from razor blades
4 - soap  picture a car being driven by a bar of soap
5 - bread  picture a loaf of hot bread in your gloved hand that is burning your fingers
6 - milk  picture shooting your gun at a milk carton and milk spilling everywhere
7 - cat food  picture shaking cans of cat food as if they were dice
8 - bacon  picture a giant pink spider eating bacon
9 - batteries  picture a fox with batteries for his tail
10 - orange juice  picture cracking eggs into a frying pan and orange juice coming out instead

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