Coordinating a vocabulary curriculum: Exploration, pilot, trial and future directions

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In 2007, Kyushu Sangyo University received the MonbuKagakusho's Good Practice grant for their compulsory English program. This award was received primarily for initial efforts at curriculum coordination. This paper outlines the focused efforts of the English Center's staff to create a coordinated vocabulary program over the three years of the MonbuKagakusho award, 2007-10. The three-year development of curriculum-wide tests, classroom/independent learning tasks and supporting E-learning is addressed in three sections. Future directions for development and the results of some preliminary empirical research aimed at specifically targeting the university's students are presented in conclusion.

九州産業大学(KSU)は必修英語科目のおいて、2007年度に文部科学省の「質の高い大学教育推進プログラム（教育GP）」賞を獲得した。KSUは主にカリキュラム協調における初期段階の取り組みによって本賞を受賞された。この論文は本校の英語教育センターがGP認証期間の2007年から2010年の間に開発した語彙学習制度を概観する。3年にわたって開発されたカリキュラム共通の小テスト、校内外で行うタスク、および独自開発のEラーニングソフトについて3つのセクションで取り上げる。最後に、今後の開発方針および本校の学生を対象とした実証的な予備調査の結果を提示する。

The majority of Japanese universities require students to study English for at least one year and many require two years of English credits. As a minimum, these compulsory English courses seek to provide students with the basic tools for English language comprehension. At the foundation of such comprehension is vocabulary knowledge.

This paper outlines the three-year development of a coordinated vocabulary curriculum, which is currently being employed at Kyushu Sangyo University, a private university in Kyushu, Japan. It has become an integral part of a compulsory English curriculum for nearly 5,000 students annually. It addresses the need for a reassessment of Japanese university learners' needs within the current era of mass tertiary education.

The short-term aim of the program is to assist students in obtaining a TOEIC Bridge score of greater than 140 and the long-term aim is a TOEIC score of 650 or greater. The general aim of the program is to give students basic fluency in English as a minimum and work-orientated fluency for students who apply themselves beyond their compulsory English studies. The complexity in achieving these goals across 200 classes is obvious. With more than 40 teachers instructing, the need for coordination beyond textbook use is essential. The importance of coordination is also central to ensure students receive a similar learning experience regardless of teacher.

To meet our minimum aim of basic fluency, nothing supersedes the importance of comprehensive knowledge of the most frequent words in the English language. It has long been recognized in first language contexts that vocabulary is linked to all aspects of language acquisition (Beck, McKeown, & Kucan, 2008). This is equally true in second language contexts (Folse, 2004; Schmitt, 2008). The research literature is consistent in stating that for basic fluency, knowledge of the most frequent 2000 words of English is essential (Nation, 2001). However, many of these high frequency words are polysemous, and/or may possess more than one possible L1 translation. In Foreign Language Learning (FLL) contexts, explicit learning of this vocabulary has proven to be the most efficient means of accomplishing this task (Folse, 2004).

In the context thus far described, with aims stated, and under the axiom of frequency based, direct instruction, our center began to work toward the development of a coordinated vocabulary curriculum which could underpin the compulsory English curriculum as a whole. The initial questions faced were: 1) Which frequency list to employ and 2) How to work effectively with part-time staff who have less invested in curricular development.

Structure and organization

This paper will discuss four components of the curriculum development across three years: resources, testing, learning tasks and E-learning. In addition, ongoing research aimed at refining the words taught will be discussed. Finally, future directions for development and research will be briefly addressed.

Overview of the program's development

Exploration stage: 2008

As a starting point, for the 2008-9 academic year, teachers were encouraged to teach vocabulary explicitly and employ the General Service List (GSL) (West, 1953), which is still the most well-known frequency list available. Teachers were given complete freedom with regard to instruction and assessment. The primary aim was for teachers to experience list-based direct vocabulary instruction and assess the GSL. The key problems which resulted from this exploration was: 1) The lack of an effective vocabulary achievement measurement instrument; 2) The wide

range of dictionaries employed by students; 3) The number of words to teach (the breadth of word knowledge); 4) The type of word knowledge and degree of word knowledge, which included depth of knowledge as operationalized by Tseng and Schmitt (2008), and the depth of meaning including polysemous meanings and alternate translations.

Pilot stage: 2009

Following the exploration in 2008-9, a pilot coordinated-vocabulary program was designed and implemented for the 2009-10 academic year. All but a few teachers chose to take part in the pilot, though none were required to do so. The chief concern of teachers who declined to participate was that the pilot curriculum would restrict their freedom to teach as they felt most appropriate. The 2009-10 pilot sought to address some of the problems that arose during the exploration. Many teachers felt the GSL was not sufficiently current. Similarly, teachers found it difficult to assess students' knowledge of the vocabulary, when definitions were being drawn from a wide range of sources, some of which were outdated. To remedy these problems the Longman Ei/Wa *Jiten (LEJ)* was adopted as a mandatory text for all students. The frequency lists within the LEJ, based on the British National Corpus (BNC), were employed as the curriculum's wordlist and its ranked definitions and example sentences were an essential component in simplifying students' work and future assessment. Finally, a vocabulary achievement test was developed to assess students' knowledge of the words taught.

Trial stage: 2010

In 2010, the previously piloted curriculum was trialed. The word list was refined to cover 800 words each year (1600 over 2 years). Coordinated weekly (10 weeks each semester), lists covering a mixture of less critical words (frequency above 1,000) and more critical words (frequency less than 1,000) were compiled. This coordination made it possible to provide weekly and semester tests and review tasks that were made available to all teachers. With the intention of further supporting the vocabulary curriculum, an online review component was piloted. Finally, following up on prior research examining the usefulness of yes/no check lists, a project was begun to directly ask students about which words they did and did not know. The goal of the trial was to create a compulsory curriculum for 2011, supported by E-learning, validated tests and employing piloted and refined word lists.

Resources

Dictionaries

Dictionary use is acknowledged to be a potentially effective vocabulary learning strategy (i.e., Schmidt, 1997), provided an appropriate dictionary is selected, and students posses the skills to use it effectively (Hunt & Beglar, 2005). While most KSU students owned at least one electronic or paper dictionary, the decision to adopt the LEJ was predicated on three factors: accuracy, teachability, and publisher support. Published in 2007, the LEJ is a bilingualized version of two Longman monolingual dictionaries, with example sentences drawn from recent corpus data. This ensures teachers and students are using an accurate, predictable and current reference with the most commonly used words indexed by frequency. As a bilingualized dictionary, the LEJ was deemed to be more suitable for KSU students than a monolingual dictionary as it contained both the information found in monolingual and bilingual dictionaries (Laufer & Levitzky-Aviad, 2006). This included the support of L1 translations that students wanted (Carter, 2008), and lower proficiency students needed (Knight, 1994). The dictionary's clear, easy to understand layout was also a factor. The use of one common

dictionary also allowed teachers to more effectively incorporate dictionary-based activities into class work, providing students with the required skills for effective dictionary use (Hunt & Beglar, 2005). The publisher further facilitated the dictionary's adoption by providing word frequency lists that were adapted to the department's needs. However, like all dictionaries, the LEJ has weaknesses. It is not consistent in supplying synonyms or antonyms or example sentences for all high frequency vocabulary. The example sentences, drawn from natural corpus, often contain low frequency words in addition to the targeted word, making them difficult to understand. Finally, as the LEJ is English with Japanese translations (Ei-Wa), but lacks Japanese to English translations (Wa-Ei) its use in productive L2 tasks is limited.

Word lists

Prior research indicates that vocabulary lists can be an effective tool for acquiring vocabulary (Folse, 2004). They support the benefits of explicit vocabulary learning (Schmitt, 2008), especially in our EFL context where students have less opportunity for implicit learning. Providing teachers and students with high frequency vocabulary lists also avoids the extra effort and problems associated with teachers or students selecting appropriate vocabulary to study (Alderson, 2007). Shared lists also encourage collaboration and sharing of resources and activities that are either teacher-created or supplied by the department. For students, the lists also provide concrete learning goals and expectations.

Lists 2008 & 2009

The initial exploratory stage (2008) utilized a list of 500 of the highest frequency words identified in the GSL, divided each semester, into 10 weekly sub-lists of 25 words. Word lists were supplied to teachers to use as they saw fit or be distributed directly to students (with first- and second-year students using the same list).

In the second year of the pilot (2009), the word list, drawn from the LEJ was heavily revised and expanded to create a new list for second year students. The first-year list included only words covered in both the 1,000 most common spoken and 1,000 most common written lists, i.e., the first 500 most common words in English. The second-year list contained the next 500 most common words. At this stage many teachers either encouraged or required students to study multiple meanings of each word if present, with the aim of deepening students' understanding of each of these high frequency words. One concern that emerged from the use of these lists was that, while multiple meanings of the highest frequency words were considered, insufficient attention had been paid to learning other high frequency words.

Lists 2010

Lists for each year were expanded to 40 words a week, with an additional 15 high frequency words. This increased the total number of words studied per year to 800, for a total of 1,600 words over 2 years. The most frequent, and therefore most useful words were chosen, though rankings varied between common word lists, and analysis with range programs found that estimations of frequency did not always correspond; high frequency words varied minimally between corpora-derived word lists, but words in the second 1,000 varied considerably depending on the resources used. To complicate matters, the LEJ gives separate frequency listings for words, written and spoken.

Additional words for the 2010 list were chosen by selecting the words contained within the overlap of the 2,000 most common spoken and written words identified by the LEJ. Although many

of the highest frequency words were found to have numerous meanings, warranting a deeper degree of coverage, multiple meanings were less common for lower frequency words. For these words, it was determined that the study of the first and second most frequent meanings was sufficient.

Tests

Assessment is a necessary aspect of any curriculum design. We developed and currently employ a range of summative tests. In curriculum assessment, it is as important to test students before beginning a program, as it is to test them at completion. For this reason, in addition to a final test, a voluntary pretest was made available to all interested teachers.

Internal research indicated that students could select basic definitions for most of the 1,000 most frequent words in English, though there were concerns that depth of vocabulary knowledge remained inadequate. A "depth of vocabulary knowledge test" was constructed to ensure that meanings beyond the most common were studied. A concern with teaching English vocabulary in Japan is that it is rare for common translations to operate as direct translations for all possible meanings for a word. For example, the word "hard" can be translated to Japanese as "*katai*" (as in a hard surface) or "*muzukashii*" (as in something that is difficult), among other potential translations.

Item formats were developed to test knowledge of multiple meanings. A monolingual format gives three example sentences of usages of the tested words from the LEJ dictionary, with the tested words deleted to create gap-fill items. Students are asked to select the word that completes all three of the sentences. For example:

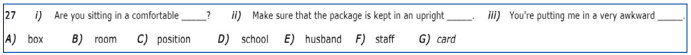

Figure 1. Test of depth of vocabulary knowledge

Several answers may be possible if only one sentence is given. However, the different example sentences can reflect different usages of polysemous words. Between the three, only one possible answer remains. In the example above, both "room" (B) could fit the first sentence, and "box" (A) seems possible for the second. However, only "position" (C) can fit all three. Therefore, the items require learners to comprehend multiple usages of common words, rather than merely single L1-L2 definitions. While suitable for higher-level learners, this format is less appropriate for lower-level students who have not mastered the basic vocabulary required to interpret the example sentences used. Consequently, a bilingual multi-meaning format was also employed:

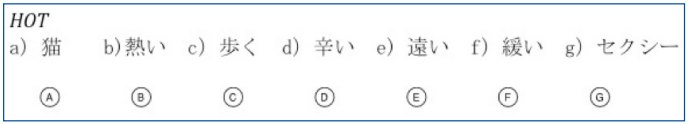

Figure 2. Bilingual multi-meaning

In addition to semester pre- and post-tests, weekly quizzes were made available for teachers. Small-stakes quizzes, even those with relatively small effects on final grades, can help structure study routines, give students attainable proximal goals, and maintain manageable rates of material review.

Classroom and independent learning tasks

Research indicates that multiple exposures to a word over time is much more likely to result in acquisition (Kornell, 2009).

Presenting the target vocabulary in a range of formats can further support learning. In pursuit of these targets a wide range of activities and materials were developed over the three years. A majority of teachers who utilized the lists also conducted regular quizzes. Teachers relied on translation, although cloze exercises and dictation were also used to check receptive and productive knowledge. These quizzes were both easier to administer and mark. This is because all students were required to utilize the LEJ as a reference. The use of the LEJ eliminated many problems, such as alternative translations that arise when students are not using a common reference. Crossword, word-search, and word scramble type puzzles using cloze or L1 clues were also employed. Some teachers also utilized multiple versions of puzzles, utilizing the same clues, which allowed students to work together, but ensured that merely copying was not easily accomplished.

Independent learning

With a goal of competency of 40 words a week, in addition to other class requirements, the importance of exposing students to potentially useful strategies for independent learning is essential (O'Malley & Chamot, 1990), especially for Japanese students, who according to research, rely almost exclusively on repetition to acquire vocabulary (Nakamura, 2002). In order to ensure students were engaging with the vocabulary list, most teachers either encouraged or required students to complete wordbooks or wordcards. Wordbooks have been widely adopted and discussed in the SLA literature (Schmitt & Schmitt, 1995). Wordcards have also been widely used in SLA contexts, both for spaced learning (Mondria & Mondria-De Vries, 1994), and creatively in games or activities that provide students with multiple opportunities to interact with and retrieve the meaning of targeted words (Noonan, 2010).

Teachers required students to complete wordbooks for a number of reasons: 1) To encourage a deeper engagement with, and systematic approach to studying the wordlists; 2) For use in a variety of vocabulary-specific and vocabulary related tasks. Wordbooks provided an almost unlimited space for students to organize, interact with, personalize, study and ultimately acquire vocabulary. They provided an opportunity for students to experiment with different study techniques that may improve students' ability to study independently. Finally, they allowed teachers to monitor students' vocabulary study and progress.

Teachers who chose not to utilize wordbooks questioned whether the time students invested in their creation was worthwhile if students failed to use them for review. This is a worthwhile question, which only further empirical study can effectively begin to answer.

Other teachers required students to create wordcards, noting that while they lacked the space for detail and personalization possible with wordbooks, they were faster to create and were more adaptable in supporting a range of study approaches such as spaced learning. They were also seen as less obtrusive and more portable than all but the smallest wordbook, which may have increased the likelihood they were used for informal study. However, these features also made the monitoring and evaluation of wordcard creation and use more problematic than wordbooks.

Some other teachers were less prescriptive in their use of the wordlists and gave students more autonomy in studying the words, or adopted a more implicit approach to vocabulary instruction that relied more on reading or written production followed by discussion in order to improve students' English. Unfortunately, as the program was still in a piloting stage and many teachers were experimenting with a variety of different approaches, it was not possible to link a specific vocabulary learning strategies with learning outcomes.

E-learning

Overview

In 2005, KSU incorporated ALC PowerWords, part of ALC company's Net Academy E-learning suite, into its compulsory English curriculum. Over 350 Japanese universities have purchased Net Academy, making it the most popular E-learning application nationwide. Despite its popularity, typically only a small fraction of the student body make use of it, primarily because it is not compulsory and students are not held accountable for their E-learning studies. This situation was addressed at KSU by making PowerWords compulsory (worth 20% of students' final grade), a modification that was instrumental to the university earning the Monbukagakusho Good Practice award 2007-10.

While this was an improvement in that it increased time-on-task, teachers felt that the PowerWords application itself was inappropriate as a supplement to KSU's vocabulary program for two primary reasons:

1. The difficulty level of PowerWords increases too quickly.

PowerWords introduces a large number of lower frequency words too rapidly. We feel that the E-learning content should consist of only the highest frequency vocabulary, and should directly reflect the content of classroom instruction and of pen-and-paper independent study.

2. PowerWords was designed for personal use by motivated learners.

Most E-learning, regardless of the target audience, seems to assume a modicum of intrinsic motivation on part of the students, marked by designs that allow much of the content to be "clicked through" with little or no engagement. We feel that our students, in particular the low-level and less motivated learners, require a more intuitive interface that forces at least some engagement with the content at each step.

These specific needs led to the development of an original E-learning application that we call KSU myWord. It is based on the 25 higher frequency words on the weekly vocabulary lists, divided into five sections of five words each. Every week, students are required to complete these five sections and one review section, ideally after completing the wordbook or other independent study. Each five-word section is comprised of tasks of gradually increasing difficulty, starting with visual and aural comprehension at the word level, progressing to word-level production and sentence-level recognition, and concluding with a visual "speed round" to foster automaticity in recall (after the Japanese definition is displayed, the corresponding English word must be clicked before the timer runs out). Student progress, based on completion of the sections, is automatically tracked by a learning management system. Each 25-word unit takes on average 20 to 30 minutes to complete.

The E-learning application itself was created with Flash authoring tools that allowed the application to be tailor-made to our specifications. All of the content was taken from the Longman Eiwa-Jiten, thanks to special permission from Longman Inc. There were some limitations to the types of tasks we could design (for example, speech recognition and spaced learning were not feasible), but the ability to customize the application to incorporate the same content from the KSU vocabulary program, week by week, was a powerful motivator, possibly due to washback effects. Students soon realized that: 1) completing the wordbook or other independent learning prior to the E-learning will make the E-learning easier to complete, and 2) completing the E-learning prior to the following class will improve performance on weekly quizzes.

E-learning 2010

KSU myWord, the E-learning component of the vocabulary program, was designed to provide students with progressively difficult retrieval and production tasks (see Appendix 1). While it is certainly possible for any of the myWord tasks to be adapted to a pen-and-paper format, the E-learning format offers several advantages:

1. Audio: many of the tasks include audio of the spoken form of the word or an example sentence. The audio plays once automatically, but it may be replayed as many times as needed by clicking an on-screen button. Instant access to the target audio is more cumbersome with older technology such as CD players.
2. Feedback: students receive instant feedback on the correctness of their response. For traditional pen-and-paper homework, several days or even weeks separate the task and its associated feedback.
3. Randomization: the order in which the five words in each task are presented is automatically randomized with each attempt, helping prevent sequential memorization and copying, which can be major issues with wordbooks.
4. Timed tasks: an on-screen countdown timer bar encourages students to activate their knowledge quickly. This is obviously difficult to achieve in a traditional task format.
5. Tracking: student progress is automatically tracked by the computer, providing immediate feedback to student and instructor. These records can be accessed online from anywhere.

2010 word knowledge research: yes/no lists

One of the aims of the vocabulary curriculum is to find out what are the best words to teach students. We know the high frequency words from corpus data but we don't know how difficult students find these words. One means of assessing students' word knowledge is to employ student self-report checklists (Anderson & Freebody, 1983).

In 2010, data was gathered from over 2,000 students using student self-report checklists for information about the words in their second semester word list. Students checked the words that they thought they already knew. The word difficulty was assessed by employing Rasch analysis of the words in Winsteps (Linacre, 2010). Words were ranked by difficulty and also each of the students was ranked by ability (for details see Gibson & Stewart, 2011). Word difficulty was found to be affected by frequency, length and the loanword status of each word. The correlation of difficulty with frequency was similar to other studies (Browne, Cihi & Culligan, 2007). An interesting finding was that students' report of word difficulty more closely followed the spoken frequency list that the written one (with a correlation of $r = 0.66$ versus $r = 0.52$). The general trend for length was that longer words were more difficult and shorter words were easier. Also, using a list from Daulton (1999), loanwords were found to be less difficult than words with no connection to Japanese.

The findings from the checklist data can be useful to our curriculum in a number of ways. For example, unknown vocabulary can be targeted. In particular, words students are likely to be challenged by in the top 1,000 list, on average, can be pointed out and effectively covered so that students reach mastery at this fundamental level. Words that are at the 2,000 level can be marked as familiar or not and students can concentrate on the ones they are most likely to not know.

Future directions

Lists: targeting

The top 2,000 most frequent words were chosen because even though students already know many of these words, even if

the count of remaining words is small they remain the most important to study; due to the pareto distribution observed in frequencies of words in the English language, it can be demonstrated that filling in the gaps on these most frequent of words will result in greater improvements in text comprehension than learning even exponentially more words of lower frequencies.

Ultimately, such a program is most effective if students have latitude to personalize their studies, and choose the words to review and study in-depth. The ultimate goal is that students leaving the program will have comprehension of all words in the word list. However, 40 words a week is beyond the scope of what teachers can teach explicitly on a weekly basis. When selecting words from weekly activities, it can be beneficial to choose words that classes of students are *least likely* to know, to draw attention to likely gaps in knowledge. Although it is of course challenging to anticipate the specific words an individual student will not know, by polling students, we can target instruction to be of maximum benefit.

The yes-no checklist data discussed above was therefore used to isolate the 15 most difficult words per week, and the list will be made available to instructors (in 2011) who wish to focus on the most likely gaps in their students' knowledge.

Instruction questions

One vital, but missing piece of data is how well the previously described system aids in improving acquisition, and furthermore which activities for learning vocabulary are most beneficial to our students, especially those with different proficiencies, and needs. In an effort to begin to answer this question, 2011 will see the start of a large-scale research project that will examine the effect of four treatments while controlling for teacher style and student ability: audio input transcription, reorganization of known or learned vocabulary, target word sentence creation to better contextualize the target word, and finally image association.

Conclusions

The program described remains under development. The only meaningful conclusion that can be drawn from our collective experience is that coordinated curricula such as this program work best when they arise from the synergy of good teaching, effective test development and research that benefits both the teachers and students. No program of the size and complexity thus far described can start fully formed; it takes years to develop the curriculum and teacher-researchers necessary. All we can suggest is that other interested English centers start by putting one foot in front of the other. Mistakes will be made, but that, in the end, is what learning is all about.

Bio data

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Appendix I

The Progression of Tasks in Each myWord Section

1. Presentation of written and spoken forms of target words and their L1 definitions (review and preparation)
2. Matching written forms of target words with L1 definitions (visual recognition and meaning)
3. Matching spoken forms of target words with L1 definitions (aural recognition and meaning)
4. Inputting single words after hearing the spoken forms (aural recognition and spelling)
5. Reordering the written form of the five words in the order that they are ordered in the audio (aural recognition and expansion of working memory)
6. Selecting one of the five words to complete a gapped sentence after hearing the spoken form of the complete sentence (contextualized aural recognition)
7. Inputting single words to correctly complete gapped sentences which are accompanied by a full L1 translation (grammar awareness raising and spelling)
8. Selecting the word that matches the L1 definition within a fixed time (development of L2 recall automaticity)