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Using Cognitive Linguistic Principles to Encourage Production of Metaphorical Vocabulary in Writing

Phil Bennett
Miyazaki International College
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Abstract

Learners in academic English environments face considerable demands on their lexical knowledge. The problem is more than just the acquisition of a large vocabulary; they must also develop an awareness of the range of meanings that words can convey. Academic discourse is known to make frequent use of metaphorical vocabulary to express abstract notions. This article reports on a two-semester investigation into learner production of conventional metaphorical vocabulary in an anthropology course. Analysis of written output revealed that control group metaphor use correlated strongly with overall proficiency, but that experimental group learners responded to the treatment in a more complex fashion.

1. Background

With the growth in popularity of English-medium instruction (EMI) programs in Japanese higher education (Brown & Iyobe, 2014), there is a need to consider the degree to which instruction prepares learners for the challenge of studying academic content in English. Regarding vocabulary instruction, word frequency has been one of the most commonly used principles for assessing the lexical demands of classroom input, and we now have a better understanding of how the proportion of known words in a written or spoken text affects learner comprehension (Schmitt, Jiang, & Grabe, 2011; Van Zeeland & Schmitt, 2012).

While it is important that learners have adequate comprehension of classroom input, it should not be forgotten that they are also required to actively participate in their own learning through the use of activities such as debates, presentations, and academic writing. Productive use of vocabulary, however, has received less attention than receptive knowledge in the literature. Word frequency again has typically been adopted as a measure to determine the sophistication of learner output, although more recent studies have also considered lexical variety and measures such as hypernymy or concreteness in analyzing learner output (Crossley, Salsbury, & McNamara, 2009; Laufer & Nation, 1995). Another aspect of lexical awareness that is now considered important in learner output is the use of words in extended, particularly metaphorical, senses (Littlemore, Krennmayr, Turner, & Turner, 2014).

Metaphorical thought, or regarding one entity in terms of another unrelated entity, is known to be one of the primary factors driving the creation of

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polysemous word meanings, and it is particularly common in academic discourse (Steen et al., 2010; Taylor, 2003). For example, economics is known to make extensive use of vocabulary related to health (e.g., *ailing/healthy economy*, *the lifeblood of the economy*), and political discourse often draws on images of warfare (e.g., *an electoral battleground*, *the Prime Minister came under attack*). Such metaphorical language is of considerable value to learners, as it represents the conventional way in which abstract notions are expressed in these disciplines. Raising awareness of the metaphorical thinking underlying typical expressions in a given field may therefore be a very useful teaching principle to adopt in academic contexts. Since polysemy is known to be generally more prevalent in high-frequency vocabulary, the learning burden of this kind of instruction may also be somewhat lighter than that of acquiring entirely new vocabulary.

2. Overview of the Study

This article discusses some of the findings from a study into raising learner awareness of the metaphorical themes underlying key concepts in an EMI anthropology course titled "Japanese Popular Culture." Two separate classes were involved in the study; the first acted as a control group, which received instruction that focused on high-frequency and academic vocabulary in the course materials. The following year, an experimental group was provided with activities that highlighted the common metaphorical themes that appeared in the course input. For example, since the course dealt with issues of culture and cultural change, the following metaphorical themes all appeared in instructional materials and teacher talk:

- CULTURES ARE LIVING THINGS[1] (e.g., cultural *evolution*, the *birthplace* of karate)
- CULTURES ARE SPACES (e.g., *enter* a culture, the Japanese *took in* many elements of Western culture)
- CULTURES ARE SUBSTANCES (e.g., Japan has *absorbed* foreign cultural influences, Lolita fashion is a *mixture* of Victorian-era styles and Japanese anime culture)

Cognitive linguistics (CL) holds that many language patterns can be seen as *motivated* by our human experience and perception of the world we live in. This explains why we can comprehend expressions such as these effortlessly; our metaphorical reasoning allows us to understand one abstract thing (e.g., a culture) in terms of something more concrete, like a living thing or physical substance. Another important principle of CL is that so-called *deep* processing, or engaging in semantic elaboration such as the creation of mental imagery, facilitates retention (Boers, 2013).

Figure 1 provides an example of how materials can promote semantic elaboration, in this case, of plant-related vocabulary. Learners were first asked to identify the core features of various plant-related words, and then to consider how these features might explain metaphorical uses of these words.

Throughout an entire semester, both groups were assigned weekly writing topics that encouraged them to reflect on class themes. The prompts used for these

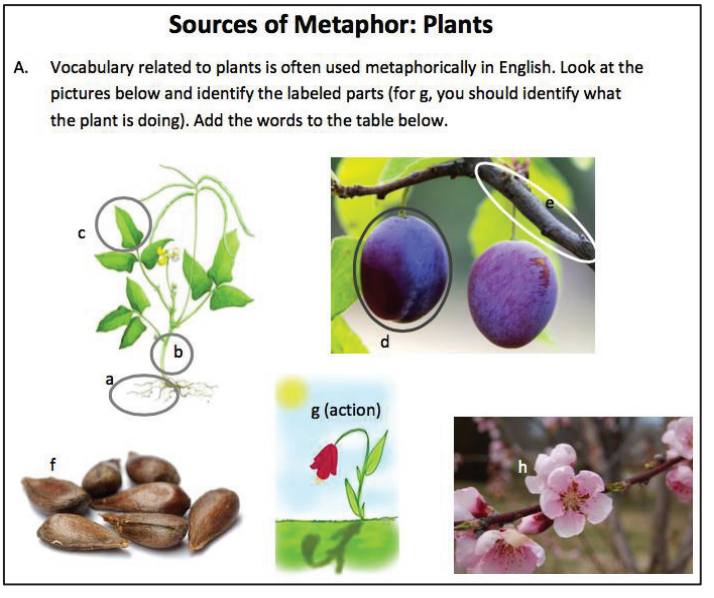

Figure 1. Sample teaching activity based on CL principles of deep processing.

topics were identical in both conditions. This writing provided the data that were analyzed for usage of metaphorical vocabulary by participants.

3. Participants

The participants in this study were all native speakers of Japanese enrolled in an EMI program in a university in southern Japan. There were 23 participants in both conditions, all second-year students in their eighth year

of formal English study. The mean TOEIC (listening and reading) score of the control group was 475.00 (SD: 137.76), while that of the experimental group was 498.48 (SD: 146.32).

4. Method of Metaphor Identification

The study used the Metaphor Identification Procedure Vrije Universiteit (MIPVU) (Steen et al., 2010) to identify words being used in metaphorical senses. Space constraints prevent a full description of this procedure, but in essence, it involves the following steps:

- Reading through a text to ensure comprehension.
- Dividing the text into *lexical units* (usually individual words, but phrasal verbs, compound nouns and some multi-word units are also considered single units).
- Considering the meaning of each lexical unit in context.
- Determining whether a more basic sense than the contextual sense exists (basic senses being more human-oriented or concrete).
- Determining whether any more basic sense is sufficiently distinct from the contextual sense (separate numbered entries in the *Macmillan English Dictionary for Advanced Learners* were taken as evidence of distinctness).
- Determining whether the contextual sense could be understood by comparison with the distinct, more basic sense.
- In such cases, the lexical unit is marked as a metaphor-related word (MRW).

5. Results

Once the learner texts had been transcribed and metaphors identified with MIPVU, the first analysis considered the overall quantity of MRWs from open-class parts of speech produced by learners in both conditions. Figure 2 displays these results in a box-and-whisker diagram, in which the dots represent mean values. The boxes show the interquartile range for each condition, the range within which 50% of the values lie on either side of the median value, depicted by the line through the middle of each box. The whiskers show maximum and minimum values.

It can be seen that in the control condition there was considerable variation in the amount of metaphor produced by learners. This variation was found to be closely related to learners' overall proficiency; the Spearman's correlation between TOEIC score and the percentage of open-class words coded as MRWs was found to be 0.795 ($p < 0.0001$). In the experimental condition, however, the values appear to be more closely bunched, particularly the lower values. The Spearman's correlation for the experimental group dropped to 0.375 ($p = 0.078$). A Mann–Whitney test found no significant difference in production of open-class metaphors between the control ($Md = 10.79\%$) and experimental ($Md = 10.91\%$) conditions ($U = 213.500$, $z = -1.12$, $p = 0.263$, $r = 0.17$).

This analysis had considered metaphor in the broadest sense; all metaphorical words in the learners' writing had been included. In order to examine the

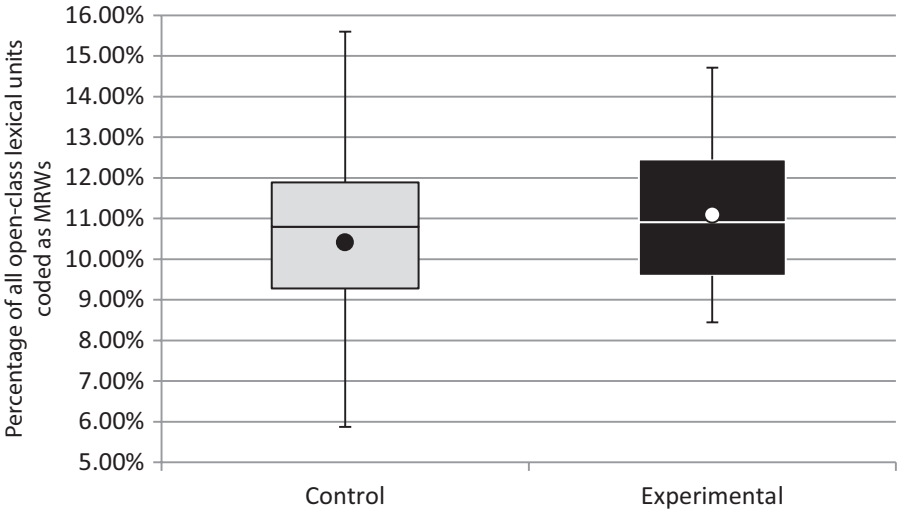

Figure 2. Open-class MRWs produced in both conditions.

effects of the experimental treatment, it was therefore necessary to narrow the focus somewhat. Accordingly, the production only of metaphors that belonged to the themes targeted for instruction was investigated. All instances of learner production of target metaphors that had been explicitly taught in the semester were noted as *taught target metaphors*. In addition, metaphorical words which had not been taught, but which could be considered to belong to the same metaphorical themes as taught expressions,[2] were recorded as *untaught target metaphors*. For example, for the CULTURES ARE SUBSTANCES theme, taught target metaphors included the words *absorb*, *mix*, *mixture*, *shape*, and *flow*, but learner output included examples such as (1–3).

1. During the long history, people made rules and *refined* sumo...
2. Japanese people like American style, because it is *permeate* that our lifestyle.
3. Spaghetti Neopolitan *derived* from some countries' cultures...

The literal senses of *refine*, *permeate*, and *derive* all relate to physical substances, and these were considered untaught examples of the CULTURES ARE SUBSTANCES theme. The distinction between taught and untaught target expressions is useful because it allows for a consideration of not only whether experimental group learners would respond to explicit instruction of particular word forms, but also whether the semantic elaboration activities would allow them to generalize beyond the taught expressions to become more independent language users, making their own appropriate language choices.

The results in Figure 3 suggest that while there was a significant increase in production of taught target metaphors between the control (Md = 0.86%) and experimental (Md = 1.04%) conditions (U = 166, z = −2.164, p = 0.030, r = 0.32), there was little difference in the production of untaught target metaphors (*Con.* Md = 0.69%, *Exp.* Md = 0.70%, U = 253, z = −0.253, p = 0.801, r = 0.04).

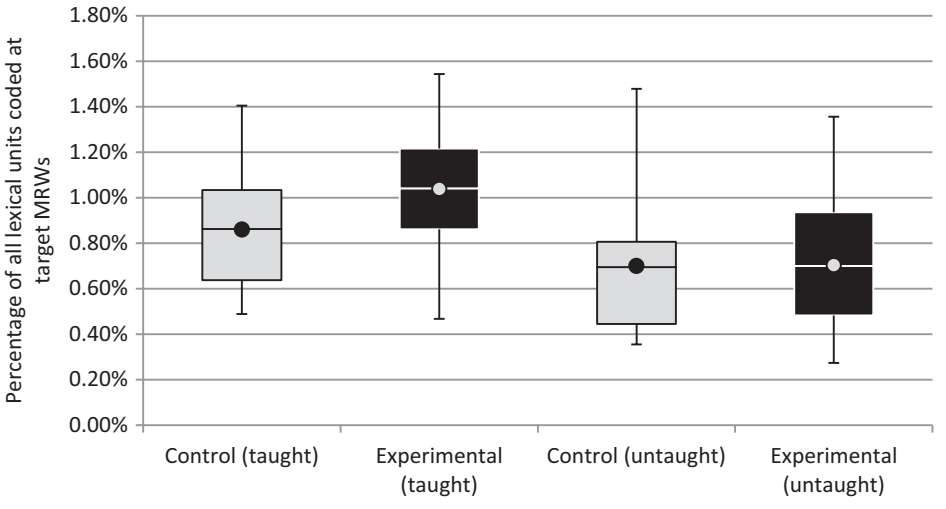

Figure 3. Taught and untaught target metaphors produced in both conditions.

This result implies that learners were responding more to the particular vocabulary they were being instructed on than the underlying metaphorical themes. However, there are two points worthy of note here. The first is that the themes learners were instructed on were not equally prominent in classroom input. Clearly, certain concepts are more frequent than others, and while the themes related to culture could be expected to appear regularly in a course on Japanese culture, learners would have had fewer opportunities to practice using language related to less prominent metaphors. The second point is that the analyses thus far have not taken account of time factors. Avoidance of language perceived as difficult is a noted phenomenon in the literature (Laufer & Eliasson, 1993), and it may take time for learners to add extended senses to their productive repertoires.

The final analysis accounts for these issues by examining learner production of only metaphors directly related to culture[3] and by considering production at three periods of time. Figure 4 shows how the frequency of culture metaphors (adjusted to a per-10,000 word rate) in learner writing developed between three 5-week time periods. It can be seen that production of taught and untaught metaphors increased over time in both conditions and that output in the experimental group was initially lower but gradually overtook that of the control. Friedman tests with *post-hoc* Wilcoxon signed-ranks tests revealed no significant differences in output between the time periods in the control condition, but significant differences were found in the experimental condition for taught metaphors between the first and second ($z = -3.43$, $p = 0.001$, $r = 0.71$), second and third ($z = -2.68$, $p = 0.007$, $r = 0.56$), and first and third ($z = -3.90$, $p = 0.000$, $r = 0.81$) time periods, and for untaught metaphors between the first and third ($z = -3.68$, $p = 0.000$, $r = 0.77$) and second and third ($z = -3.03$, $p = 0.002$, $r = 0.63$) time periods.

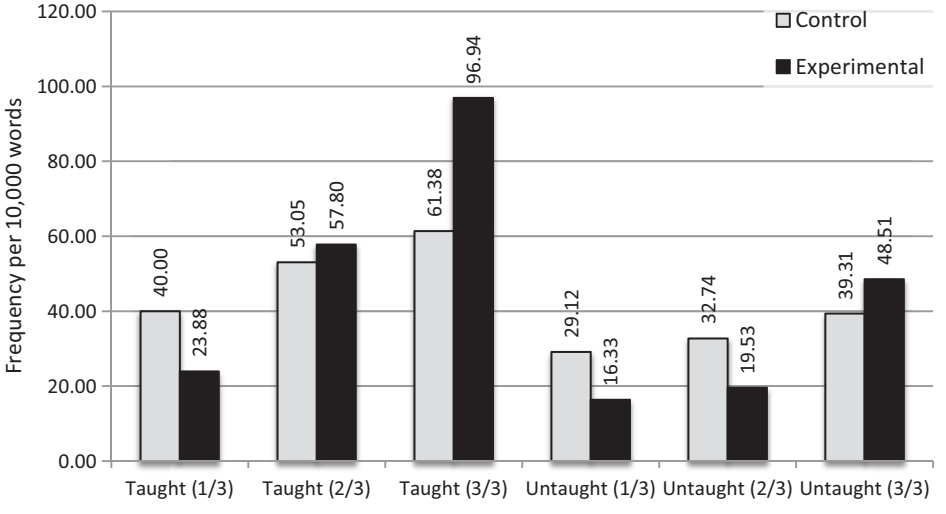

Figure 4. Production of taught and untaught culture metaphors over thirds of a semester.

6. Discussion

These findings suggest that semantic elaboration of metaphorical themes relevant to course content can lead to greater learner production of such language. However, as with all investigations into free production, the picture is complex. Whether learners responded more to the teaching of metaphorical themes or simply the vocabulary itself cannot be fully resolved here, although Figure 4 gives the impression that experimental group learners were increasingly making their own linguistic choices as the semester progressed, as well as drawing on expressions they had been taught in class. Further studies in this area could examine the effects of metaphor awareness on receptive skills, and there is clear potential for studies on the influence of the L1 on both metaphor comprehension and production.

Since the writing topics were completed outside of class and with reference materials available, it cannot be claimed that the changes in production described here reflect actual acquisition of metaphorical language. Instead, this study has adopted Swain's (1985) notion of *pushed output* as an important step in steering learners toward language that is appropriate for a given context. Metaphorical vocabulary may be particularly suited to this form of instruction since it has been shown that extended word meanings may be among the most difficult aspects of lexical knowledge for learners to develop (Dóczi & Kormos, 2016, pp. 70–81). This serves as a reminder that as well as the acquisition of new vocabulary, there is benefit in expanding the boundaries of already known expressions.

Notes

1. Conceptual metaphors, or metaphorical themes, are typically written in small caps in cognitive linguistics.

2. Steen (1999) describes a procedure by which linguistic metaphors can be related to underlying conceptual metaphor themes.
3. There were six themes related to culture: CULTURES ARE LIVING THINGS, CULTURES ARE SPACES, CULTURES ARE SUBSTANCES, CULTURES HAVE MANY PARTS, CULTURES ARE CONSTRUCTIONS, and CULTURES ARE POSSESSIONS.

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