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# Effectiveness of Form-Focused Versus Meaning-Focused Consolidation Tasks in Preposition Instruction

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This study investigates the effectiveness of form-focused versus meaning-focused consolidation tasks in teaching English prepositions within a cognitive linguistic (CL) framework. Experiment 1 involved first-year Japanese students ( $N = 44$ ) and examined the impact of short CL-based lessons delivered in English. The results indicated minimal learning gains, suggesting that the language of instruction may have posed comprehension challenges. Experiment 2, conducted with a larger sample of Japanese university students ( $N = 162$ ), utilized computer-assisted language learning (CALL) materials with explanations provided in Japanese. This experiment introduced a third condition combining both form-focused and meaning-focused tasks. The findings revealed significant improvements across all groups, with the mixed condition showing the greatest gains. These results suggest that combining form-focused and meaning-focused consolidation tasks can enhance the learning of prepositional senses. The study also highlights the potential benefits of incorporating CL-based lessons on prepositions in college-level English as a foreign language (EFL) courses.

**Keywords:** semantics, prepositions, cognitive linguistics, CALL, pedagogy, schematic diagrams

## INTRODUCTION

This paper compares the effectiveness of two approaches to teaching prepositions using a cognitive linguistic (CL) framework. Following a review of research that has explored the effectiveness of CL-based approaches in second

language instruction, the paper's methods and results sections describe two experiments that compared the effectiveness of consolidation tasks focused primarily on form or meaning (or a combination of the two). The discussion section considers the practical relevance of the findings to college-level English instruction.

Cognitive linguistics, as exemplified by the work of key figures such as Langacker (2008), Lakoff (1993), Talmy (2018), and Goldberg (1995), has provided a compelling usage-based theoretical framework (see McManus, 2024) based on the premise that language emerges from construal operations (Croft & Cruse, 2004), such as categorization and attention, which in turn are fundamentally shaped by human beings' typical interactions with physical objects and other intentional agents. In the last two decades, this theoretical work has spawned a growing body of SLA research that has examined the effectiveness of CL-based pedagogical approaches (for a review, see Liu & Qin, 2024; Robinson & Ellis, 2008; Tyler, 2012). Much of this research has compared CL-based instruction with more conventional approaches. A few of these comparison studies have failed to find a clear advantage for CL-based approaches. For example, Mueller and Tsushima (2019) conducted three experiments on the effectiveness of a CL-based lesson that used Talmy's theory of force dynamics to teach the semantics of the English verbs *force*, *get*, *have*, *help*, *let*, *make*, and *prevent*. They found that both the CL-based and a more conventional translation-based lesson resulted in sizable gains on the post-tests, but the minimally greater gains of the CL instruction did not approach significance. Yet their findings are not typical. Most studies that have conducted such comparisons have found clear advantages for CL-based instruction as applied to a large number of instructional targets, including modals (Tyler et al., 2010), prepositions (Kissling, 2024; Wong et al., 2018), metaphorically motivated lexical items (Boers, 2000), metaphorically based phrasal verbs (Yasuda, 2010), and figurative motion constructions (Martín-Gascón, 2023).

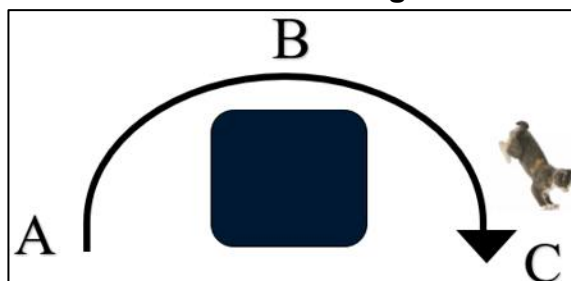
Many of the studies that have examined CL-based instruction have focused on the learning issue posed by polysemy. This problem is especially acute in the case of prepositions (the focus of the current study), since core members of this word class (e.g., *in*, *to*, *for*, *on*, and *at*) can have dozens of distinct senses (for a discussion of the learning problem posed by English prepositions, see Mueller, 2022). To give just one example, Brenda and Mazurkiewicz-Sokołowska (2022, p. 217), in their book-length treatment of the English preposition *to* and its German, Polish, and Russian equivalents, list 28 distinct prepositional senses for English *to*. They show that the English preposition *to* can, in many cases, be mapped clearly onto close equivalents in German, Polish, and Russian, yet even these languages, which are all members of the same language family, often extend the core meaning of *to* in idiosyncratic ways. The learning problem posed by polysemous prepositions is compounded for learners from L1s such as Korean and Japanese, since for these learners, the meanings associated with each English preposition tend to be expressed by multiple L1 forms and various parts of speech (e.g., through postpositions, auxiliary verb constructions, and lexical semantics).

CL-based lessons used to convey the polysemy of prepositions often include a presentation phase, in which the semantic distinctions of the target prepositions' polysemy networks are taught, and a consolidation phase, in which learners practice applying what they have been taught to target language sentences. In the case of prepositions with a core spatial sense, the presentation phase often involves the use of abstract diagrams designed to convey the relationship between the landmark and trajector (and, in some cases, the vantage point). As described by Langacker (2009), the *trajector* is the "primary focal participant" that is profiled within a spatial configuration (p. 8). The *landmark* is the "secondary focal participant" that serves to locate or characterize the trajector (pp. 8–9). The landmark element is typically stationary relative to a given reference frame (Talmy, 2000). For example, in the sentence *The cat is on the mat*, "the cat" is the trajector, and "the mat" is the landmark.

The spatial configurations that underpin prepositional meaning are often conveyed, in pedagogical materials, through schematic diagrams (Wong, 2022; Wong et al., 2018; Zhao et al., 2020). As an example of such materials, consider the diagram shown in Figure 1, which was taken from the materials used in Experiment 2 (discussed below). In this case, the landmark element (the black square) and the trajector (a cat) are shown with an arrow indicating that the trajector has crossed over the landmark. The depiction of the cat at Point C indicates that the focus, in this particular sense of "over," is on the endpoint of the trajectory. The vantage point, which in this case is external to both the landmark and trajector, is often not depicted in diagrams.

Diagrams used in explanations intended for linguists often consist solely of abstract elements (e.g., the use of abstract shapes to show both the landmark and trajector), but those used in pedagogical materials often include more realistic elements (such as the cat in Figure 1), as these are thought to be more readily understood by L2 learners. CL-based materials will also discuss the metaphorical extensions from basic spatial scenes (see, for example, Wong et al., 2018). For example, the "traversing" sense of "over" (depicted in Figure 1) often implies the effortful overcoming of a difficulty and is thus extended, in English, to the surmounting of negative emotional states (e.g., *She had a hard time getting over her grandmother's death.*)

**FIGURE 1. An Abstract Diagram Showing the Traversing Sense of OVER**



CL-based explanations of prepositional senses tend to emphasize the functional aspects of the sense (see Coventry & Garrod, 2004; Garrod et al., 1999).

Consider, as an example, the notion of containment expressed by the preposition *in*. A CL-based description of this preposition's core sense may begin by noting that the prototypical configuration denoted by "in" involves a trajector situated within a container that is viewed from an external vantage point. However, containment has important implications based on our typical embodied interactions with containers in life. For example, if we move a container, the object inside typically moves along with it; and if something is in a container, it often remains there. These functional entailments frequently motivate metaphorical extensions of prepositional meaning. For example, if we describe people as being "in love," we expect them to remain in that state for some time. To sum up, CL-based lessons often involve an initial presentation of a spatial preposition's core meaning along with discussions of how other related senses emerge as this core meaning is extended. These extended meanings can emerge through shifts in focus that are sometimes based primarily on specific functional aspects of meaning or on metaphorical mappings of concrete meanings to more abstract domains.

The consolidation phase of CL-based lessons, when included within a pedagogical sequence, is designed to reinforce the form-meaning associations taught during a lesson. For example, Tyler et al. (2011), in an experimental intervention focusing on the prepositions "at," "for," and "to," had their participants, working in pairs, complete a worksheet in which they chose the prepositions that best completed various sentences. To provide context, these sentences appeared in a short essay about a family's trip to an island. The format of the exercise focused learners' attention on choices between forms (i.e., which preposition to choose from five possible choices). In this paper, we will refer to this type of review task as a "form-focused consolidation task."

Pedagogical materials can also be designed to draw learners' attention to the precise senses taught within a lesson. For example, a study by Zhao et al. (2020) essentially merged the traditional presentation and practice phases in a CL-based online lesson in which Chinese-L1 participants learned various senses "in," "at," and "over." Each group saw sentences paired with a corresponding picture. They had to choose which preposition (from two options) best completed the sentence. One group also saw a schematic diagram depicting the underlying spatial configuration that motivated the target prepositional sense. Zhao et al. found that the lower-proficiency participants in the schematic diagram group achieved greater gains than their counterparts in the group who did not see schematic diagrams. Since their materials only showed two prepositions as choices and, in the case of the diagram group, included pictorial elements paired with schematic diagrams, we could consider their lesson as highly meaning-focused. Zhao et al. refer to this training as an instance of "cue focusing," a form of instruction that draws learners' attention to the specific features that determine the choice of a target form (Zhao & MacWhinney, 2018). It should be noted that in the case of the prepositions that form the focus of this study, these "cues" are semantic. In other words, learners need to attend to the specific construal of a landmark and trajector, and understand how construals of spatial configurations are related to functional entailments and metaphorical extensions.

## EXPERIMENT 1

Previous research has examined pedagogical interventions that draw attention to the form-meaning mapping of English prepositions. A key issue, when designing pedagogical review tasks that follow a lesson, is deciding whether they should primarily draw learners' attention to form or should place most of their emphasis on the precise prepositional sense that motivates a given prepositional choice. In this paper, we refer to the former approach as a "form-focused consolidation task" (FFCT) and the latter, as a "meaning-focused consolidation task" (MFCT). Experiment 1 sought to determine which of these two approaches would be more effective.

### Method

#### Participants

The participants ( $N = 44$ ) were first-year Japanese students attending a private women's university in Japan. They were from four intact oral English classes that met four times a week for 45 minutes each session. Most could be characterized as at the B1 level of the Common European Framework of Reference (Council of Europe, 2020). The participants had all selected English as their major, and many hoped to pursue jobs that required English after graduation.

#### Materials

The lesson materials presented 16 prepositional senses associated with five prepositions. The target senses (shown with examples in Table 1) were selected based on classroom experience and earlier piloting that had shown that the senses were particularly difficult for Japanese learners.

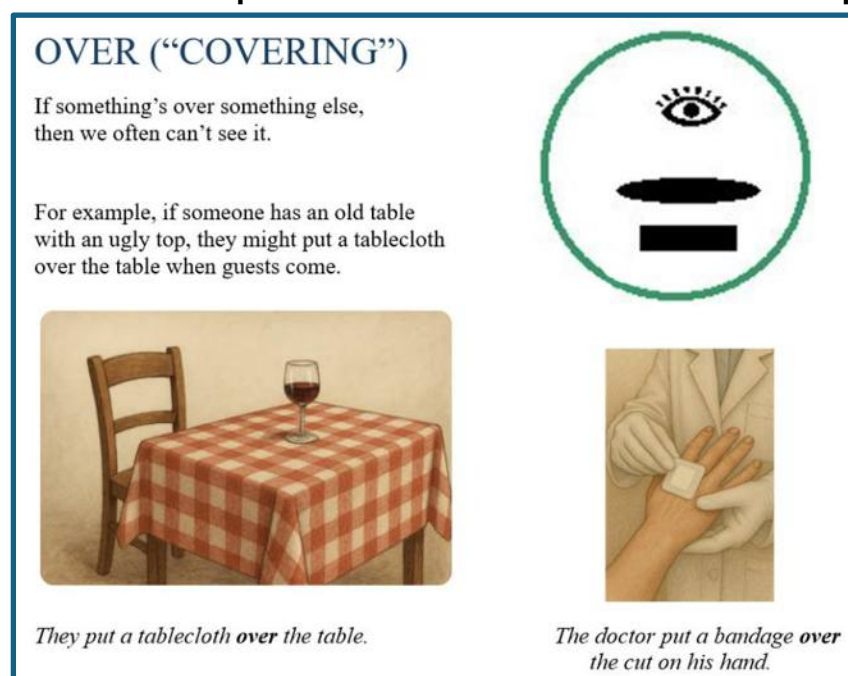
**TABLE 1. The 16 Prepositional Senses Targeted in Experiment 1**

| Preposition | Sense                    | Example                                           |
|-------------|--------------------------|---------------------------------------------------|
| at          | targeting                | He threw a rock at the wolves.                    |
| at          | directed words or vision | She shouted at him.                               |
| at          | measuring                | At high speeds, the car begins to shake.          |
| for         | scope of evaluation      | Junk food is bad for children.                    |
| for         | benefit                  | My mother baked a cake for me.                    |
| for         | proxy                    | <i>Neko</i> is the Japanese word for <i>cat</i> . |
| for         | exchange                 | She gave him \$3,000 for the car.                 |
| on          | topic                    | She gave a talk on global warming.                |
| on          | technology as support    | They talked on the phone.                         |
| over        | covering                 | Sally put her hands over her eyes.                |
| over        | preference               | I prefer oranges over apples.                     |
| to          | giving                   | She threw the ball to her dog.                    |
| to          | communication            | He spoke to her.                                  |
| to          | attachment               | He taped the poster to the wall.                  |
| to          | affecting behavior       | She was mean to him.                              |
| to          | perception               | This milk doesn't taste right to me.              |

An 11-page hand-out was created for the participants. It provided a brief gloss for the targeted sense, an abstract diagram showing the configuration of the landmark, the trajector, (in some cases) the vantage point, and two examples of the sense as used in simple sentences. The text was accompanied by images designed to facilitate participants' understanding of the sentences. An example of the section of the hand-out that explained the "covering" sense of the preposition "over" is shown in Figure 2.

Two practice worksheets were created. The worksheet for the form-focused consolidation task (FFCT) consisted of 16 fill-in-the-blank items. Each item was accompanied by a picture to help participants understand the intended meaning of the sentence. The prepositional senses that had been taught appeared at the top of the worksheet. The directions stated that participants were to fill in the blanks with the most appropriate preposition. The worksheet for the meaning-focused consolidation task (MFCT) was identical except that the 16 targeted senses (i.e., the preposition with a gloss referring to the precise sense, such as the "covering" sense of *over*) appeared at the top of the worksheet and the directions required participants to choose the precise sense of each preposition.

**FIGURE 2. Example of Instructional Materials Used in Experiment 1**



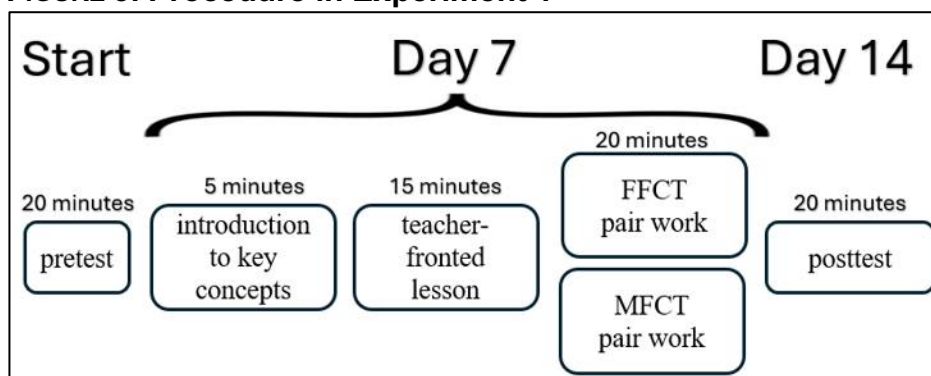
In addition, two test forms (a pre-test and post-test) were created. Both tests used a fill-in-the-blank format in which participants had to select the best preposition to complete the sentence from seven candidates. The test items targeted the 16 prepositional senses that were part of the lesson. The seven possible responses were provided to prevent participants from choosing other prepositions or other possible words that could complete the sentences but were not part of the targeted lesson. Each test item was accompanied by a picture to help learners understand the intended meaning of the sentence. For a couple sentences that contained low-frequency words

that participants possibly did not know, a note was added just below the item, providing the Japanese translation of the English word. To encourage participants to regard the distractor prepositions that were not part of the lesson as plausible answers, two additional items that targeted one of these “distractor” prepositions were included. One of these appeared as the first item on the test. The test therefore consisted of 18 items (16 target items and 2 distractor items).

### Procedure

During the first session, participants were given 20 minutes to complete the pre-test. One week later, participants received a 45-minute lesson on the target prepositions. The lessons were given to approximately 20 participants at a time, with each experimental group consisting of two of the instructors' (the first and fourth authors') intact classes that had been combined for the lesson. The two instructors taught the lesson together. At the beginning of the lesson, the instructors briefly explained the concept of a landmark, trajectory, and vantage point. They then spent 15 minutes explaining each prepositional sense based on the hand-out. After this, participants were put into pairs and were asked to fill in the answers to a worksheet. For the FFCT group, the task required them to fill in the blanks with the appropriate preposition. For the MFCT group, the task required them to write down the precise prepositional sense that was being used in the sentence. During the last five minutes of the class, the instructors went over the answers. One week after the lesson, participants took a surprise post-test, which they were given 20 minutes to complete. A diagram of the experimental procedure is shown in Figure 3. As can be seen, the experimental manipulation occurred in the latter half of the lesson as participants did pair work.

**FIGURE 3. Procedure in Experiment 1**



### Results

The summary statistics for Experiment 1 are shown in Table 2. As can be seen, both groups were able to supply the correct preposition on just over a third (37%) of the items on the pre-test. Moreover, both groups demonstrated scant improvement on the post-test, with the FFCT group (which did only marginally better) achieving a mere six percent improvement.

**TABLE 2. Summary Statistics for the Experimental 1 Groups**

| Test                    | FFCT Group ( <i>n</i> = 23) | MFCT Group ( <i>n</i> = 21) |
|-------------------------|-----------------------------|-----------------------------|
| Pre-test ( <i>SD</i> )  | 5.95 (2.50)                 | 6.00 (1.91)                 |
| Post-test ( <i>SD</i> ) | 6.90 (3.08)                 | 6.09 (2.64)                 |

An ANCOVA, conducted to determine the effect of instructional type on post-test scores while controlling for pre-test scores, showed no significant effect,  $F(1, 41) = 1.46$ ,  $p = .234$ ,  $\eta^2_p = .03$ . Paired samples  $t$  tests were then conducted to determine whether the pre-test to post-test gains were significant for each group considered separately. As would be expected, the miniscule gains of the MFCT group were not significant,  $t(22) = 0.20$ ,  $d = 0.04$ ,  $p = .840$ , nor were the slightly larger gains of the FFCT practice group,  $t(20) = 1.62$ ,  $p = .120$ ,  $d = 0.35$ .

## EXPERIMENT 2

The results of the first experiment were disappointing since neither group demonstrated much learning. One possible reason for this was the language of instruction. The participants may have struggled to understand explanations of the abstract semantics underlying prepositions when these were given in English. In addition, the first experiment did not examine possible benefits of combining form-focused and meaning-focused consolidation tasks. For this reason, a second experiment was conducted using Japanese materials and a third experimental condition.

### Method

#### Participants

The participants were first-year students attending five intact English classes at a large public university in Japan. There were 169 students (39 female and 130 male) attending these classes, but the data from seven students were excluded from the analysis since they failed to complete one phase of the study or did not give permission to use their data for experimental purposes. Among the 162 participants whose data were included in the study, 65 were assigned to the meaning-focused consolidation task (MFCT) condition, 64 were assigned to the form-focused consolidation task (FFCT) condition, and 33 were assigned to the “mixed” condition (explained below). Participants came from varied majors and could be described as ranging from B1 to B2 in the CEFR levels (Council of Europe, 2020).

#### Materials

Two sets of materials were created using Adobe Captivate, a professional eLearning authoring tool used to create interactive multimedia learning content. The

first set of materials was a lesson that taught 20 prepositional senses associated with the prepositions “at,” “to,” “over,” and “on.” The targeted senses are shown in Table 3.

The targeted senses were selected based on early piloting and classroom experiences with Japanese students that showed that the target senses were particularly challenging for Japanese learners of English. The lesson used abstract diagrams (an abstract depiction of the spatial configuration underlying the target sense, showing the trajector, landmark, and, in some cases, the vantage point). Each slide in the presentation contained images accompanied by both text and audio. Unlike the materials used in Experiment 1, all the explanations (text and audio) were provided in Japanese. To create readily intelligible audio files with high signal clarity, the Japanese voice was created using the “read aloud” function in Microsoft Word. To provide an engaging variety of English voices (some of which appeared in short dialogs), audio files were created using ElevenLabs, an AI voice generator. Both British and American accents were used. The slides in the lesson, which lasted approximately 25 minutes, were timed to automatically progress at the end of each explanation. Adobe Captivate allows creators to time the appearance and disappearance of various visual elements on the screen. Variations in timings were therefore used to make the content more dynamic and engaging, and to draw participants’ attention to specific elements of the content as it was discussed in the accompanying audio.

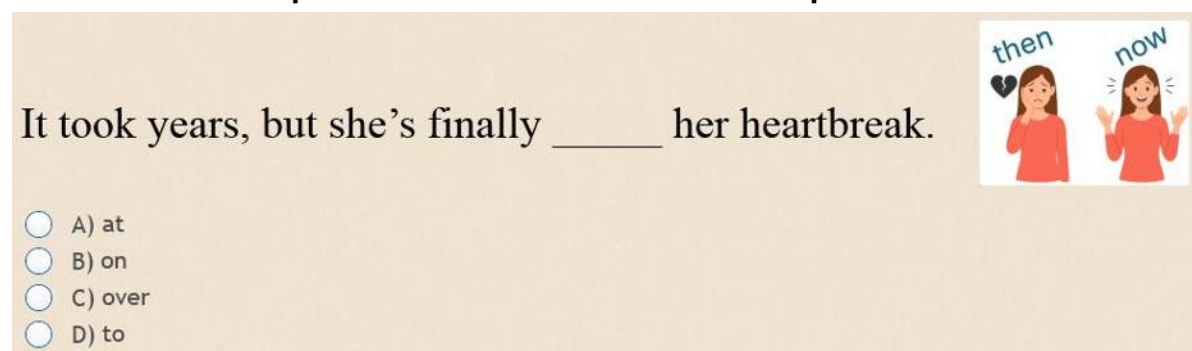
**TABLE 3. The 20 Prepositional Senses Targeted in Experiment 2**

| Preposition | Sense                            | Example                            |
|-------------|----------------------------------|------------------------------------|
| at          | targeting                        | He threw a rock at the wolves.     |
| at          | directed words or vision         | She shouted at him.                |
| at          | measurement                      | At high speeds, the car shakes.    |
| on          | support                          | There’s a fly on the ceiling.      |
| on          | cause as support                 | She put the blame on him.          |
| on          | topic as basis                   | She gave a talk on U.S. history.   |
| on          | technology as support            | I saw the show on YouTube.         |
| over        | other side (metaphorical)        | She’s finally over her heartbreak. |
| over        | covering                         | She put her hand over her eyes.    |
| over        | preference                       | She prefers Tom over Jim.          |
| to          | facing                           | Her house faces to the east.       |
| to          | end point                        | They fought to the death.          |
| to          | object of attention              | All evidence points to him.        |
| to          | giving/receiving                 | She threw the ball to her dog.     |
| to          | giving/receiving (communication) | She gestured to her friend.        |
| to          | affecting behavior               | She was mean to him.               |
| to          | perception                       | This milk tastes strange to me.    |
| to          | touching                         | They stood shoulder to shoulder.   |
| to          | attachment                       | She chained her dog to the post.   |
| to          | attachment (metaphorical)        | She’s addicted to coffee.          |

The second set of materials created with Adobe Captivate consisted of a consolidation task in the form of a quiz. The quiz targeted the 20 prepositional senses taught during the lesson, with two items for each of the senses that had been taught. The materials for the form-focused consolidation task (FFCT) group consisted of a fill-

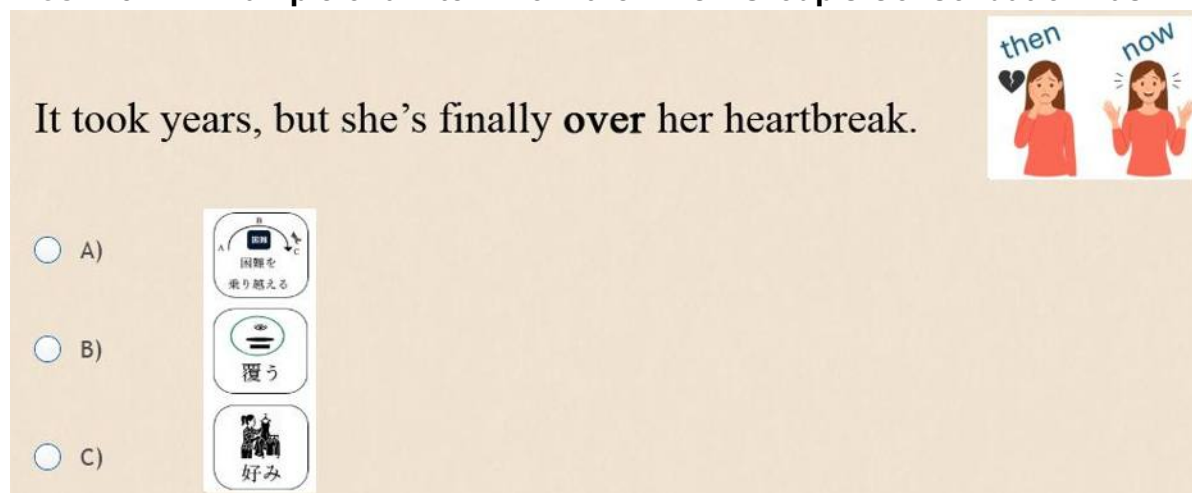
in-the-blank quiz. Sentences were presented with the preposition missing, and four options were presented below each sentence. A picture was also presented on each slide to facilitate participants' understanding of the sentence. If participants chose the wrong answer, the word "incorrect" appeared, and they were prompted to try again. The process was repeated until they had selected the correct response, at which point the word "correct" appeared on the screen, and the program advanced to the next item. An example is shown in Figure 4.

**FIGURE 4. An Example of an Item from the FFCT Group's Consolidation Task**



Similar materials were created for the MFCT group. The only difference was that the prepositions were provided and were shown in boldface, and participants were required to choose the precise sense of the target preposition. To indicate the individual senses, an iconic representation of each sense along with a Japanese gloss were shown (for an example, see Figure 5). These icons and glosses would be familiar to participants as they had appeared in the earlier lesson. As in the materials for the FFCT group, the slides did not advance until the participant had selected the correct response.

**FIGURE 5. An Example of an Item from the MFCT Group's Consolidation Task**



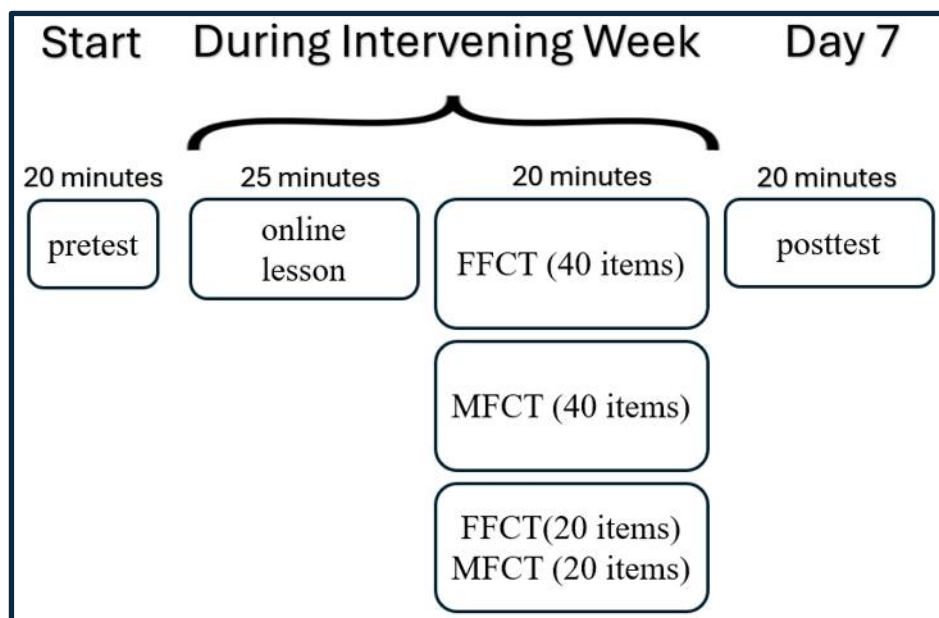
A third set of materials was created for the "mixed" group. In these consolidation task materials, the first 20 items were identical to those used by the MFCT group and the second 20 items were identical to those used by the FFCT group.

In addition, a 30-item pre-test and 30-item post-test were created. Twenty items targeted the 20 prepositional senses taught during the lesson, and 10 items served as distractors. The latter were included to encourage participants to consider other prepositions, beyond those taught, as possible responses. As in Experiment 1, each item consisted of a sentence with the target preposition missing. Participants had to select the best preposition to complete the sentence from six candidates. Both the pre-test and post-test were created in electronic format using Google Forms. Unlike the Experiment 1 test, no pictures were provided next to the sentences.

### Procedure

Participants took the pre-test in class using Google Forms. They were then asked to view the online lesson and complete the online consolidation task (the task corresponding to their assigned group) prior to class in the following week. They were also informed that they would be given a graded preposition test during the next class. One week after the pre-test, participants took the post-test in class using Google Forms. An outline of the procedure is shown in Figure 6.

FIGURE 6. Procedure for Experiment 2



### Results

The summary statistics for the pre-test and post-test results are shown in Table 4. As can be seen, all three groups made incorrect responses on over half of the items on the pre-test but demonstrated substantial improvement following instruction. The FFCT group ( $n = 64$ ) improved from 47.8% to 74.0%, the MFCT group ( $n = 65$ ) improved from 45.8% to 69.0%, and the mixed group ( $n = 33$ ) improved from 43.9% to 78.0% correct.

**TABLE 4. Summary Statistics for the Experiment 2 Groups**

| Test                    | FFCT Group   | MFCT Group   | Mixed Group  |
|-------------------------|--------------|--------------|--------------|
| Pre-test ( <i>SD</i> )  | 9.56 (2.99)  | 9.17 (2.39)  | 8.79 (2.15)  |
| Post-test ( <i>SD</i> ) | 14.80 (4.06) | 13.80 (3.71) | 15.60 (3.45) |

To determine whether there was a significant difference among the three groups over time, a repeated measures ANOVA was conducted on participants' scores ( $N = 162$ ), with time (pre-test and post-test) as a within-subject factor and instructional type (preposition practice, sense practice, and mixed practice) as a between-subjects factor. The analysis revealed a significant main effect of time,  $F(1, 159) = 285.03$ ,  $p < .001$ ,  $\eta^2_p = .642$ , indicating overall improvement from pre-test to post-test. There was also a significant interaction between time and instructional type,  $F(2, 159) = 3.07$ ,  $p = .049$ ,  $\eta^2_p = .037$ , indicating that the amount of improvement differed across groups. To assess this interaction, post hoc comparisons were conducted using pairwise  $t$  tests with a Bonferroni-adjusted significance threshold ( $\alpha = .05 / 3 = .0167$ ). A significant difference in improvement was found between the mixed group and the MFCT group,  $t(96) = 9.27$ ,  $p = .012$ ,  $d = 0.55$ , representing a medium-sized effect. No significant differences were found between the mixed group and FFCT group,  $t(96) = 1.77$ ,  $p = .080$ ,  $d = 0.38$ , or between the FFCT group and the MFCT group,  $t(96) = 0.76$ ,  $p = .448$ ,  $d = 0.13$ . In the post hoc analysis, individual  $t$  tests within each group confirmed that all three groups, when considered individually, improved between the pre-test and post-test ( $p < .001$ ).

## DISCUSSION

Broadly speaking, second-language instructional materials are typically designed to draw learners' attention to the association between form and meaning. However, materials can vary in the degree to which they highlight choices between forms or force learners to make fine-grained semantic distinctions. The present study is, to our knowledge, the first cognitive linguistics (CL) study to directly manipulate the degree to which a consolidation task focuses on form or meaning. Two experiments were conducted. Experiment 1 compared the effectiveness of in-class lessons with either form-focused or meaning-focused consolidation tasks. The lack of significant results suggest that first-year Japanese learners were unable to benefit from very brief CL-based lessons in which the instruction was provided entirely in the L2. In some respects, this is unsurprising. Although the concepts (e.g., the notion of a trajector and landmark, and extensions of meaning from a core sense) were explained in simple terms, these ideas were presumably both novel and challenging for these learners, and were therefore difficult to grasp when presented in the participants' second language.

Experiment 2 compared the effectiveness of computer-assisted language learning (CALL) materials in which the consolidation phase of learning was meaning-

focused, form-focused, or mixed (i.e., half meaning-focused and half form-focused). While all three experimental groups achieved significant improvement, results showed that the group given the “mixed” materials showed significantly more improvement on the post-test than the group that used the meaning-focused materials. The “mixed” group did not statistically outperform the form-focused group, yet it should be noted that their greater gains tended toward significance. Based on these results, we can conclude that materials used in consolidation tasks should not focus solely on recalling semantic distinctions. We can hypothesize that the learners who did the meaning-focus consolidation task devoted so much attention to recalling the fine-grained semantic distinctions that they sometimes lost track of the form (i.e., the preposition) associated with the meaning.

The quantitatively better performance of the “mixed” group, relative to both of the other groups, is intriguing. One potential weakness of the form-focused consolidation tasks is that learners may begin to forget the semantic distinctions presented in the preceding lesson and revert to their prior interlanguage representations of prepositional meaning. As Ellis and Wulff (2015) have argued, transfer phenomena are pervasive in SLA, since L2 learners’ initial state “is one that is already tuned and committed to the L1” (p. 82). While this is widely recognized to be the case for morphosyntax (Pienemann & Lenzing, 2015; VanPatten, 2015), it is less widely acknowledged that it is also true for semantic knowledge. Consider, for example, a study by (Munnich, 2002). He examined 60 non-native English speakers (Korean or Spanish L1) who had spent at least five years in the U.S., where they had attended college or graduate school. He found that those who had arrived in the U.S. at older ages had great difficulty in describing spatial scenes (e.g., spatial relationship involving support, containment, and vertical displacement, which tend to be expressed through prepositions). This was especially true when the key semantic distinctions were underpinned by functional information (i.e., information based on the functions that objects perform rather than topographical relationships). Consolidation exercises that force learners to recall precise semantic distinctions that motivate prepositional choices may therefore be more effective when combined with form-focused exercises.

The current study has a number of limitations. Most notably, the participants’ acquisition of the prepositional senses was not examined on delayed post-tests. It is likely that their sizable post-test gains would not be sustained over time without further reinforcement. Ideally, participants’ learning would also be assessed in naturalistic tasks with time pressure to determine the degree to which the lessons affected their performance when they were not directing their attention to the choice of preposition. For example, participants could be asked to describe pictures under time pressure. Unfortunately, such tasks are challenging to implement within an experimental setting, and the results can be difficult to interpret. To cite just one methodological conundrum, in picture description tasks, the experimenter must decide how to score performance when the learner uses an alternative description that is correct but avoids the prepositional form that is being elicited. Moreover, if the assessment takes the form of a naturalistic task performed under time pressure, the learning and practice phases of

study presumably need to be much longer to achieve effects that are large enough to show potential differences between experimental groups.

Future researchers may also wish to examine variations in meaning- and form-focused activities. The “mixed” condition in the current study simply involved a third condition in which the first half of the items were presented in the meaning-focused condition and the second half in the form-focused condition. We can imagine an alternative variation in the consolidation task condition in which these are interwoven. For example, the form-focused consolidation practice item could appear first, and then participants could be asked to identify the precise sense that motivated the prepositional choice (as in the meaning-focused condition in the two experiments).

## CONCLUSION

The sizeable post-test gains by all three groups in Experiment 2 suggest that reasonably short CL-based instruction, when presented in an effective way, can result in significant learning. This provides preliminary support for the decision to include CL-based lessons on prepositions in college-level EFL courses. As noted by Mueller (2025), 11 prepositions occur over 1,000 times per million words in English, yet this word class receives little attention in many popular textbooks. Unfortunately, the few exercises that many mainstream textbooks do provide typically make no attempt to convey the ways in which multiple senses emerge from a preposition’s core sense. Since the central spatial prepositions of English occur with high frequency and since college-level English learners can often achieve a basic level of accuracy on prepositions due to their knowledge of frequently occurring verb–preposition or preposition–noun collocations (e.g., “talk to,” “shout at,” “on time,” etc.), many English instructors may hastily conclude that prepositions do not present a problem for high-level learners and therefore do not merit attention in their courses. Yet, Mueller (2011) has shown that learners’ accuracy on prepositions, which often occur in common collocations, does not necessarily reflect their understanding of the underlying semantics. In an experimental study, he gave Chinese-, Korean-, and Spanish-L1 speakers a fill-in-the-blank test in which a preposition with the same sense appeared once in a high-frequency collocation (e.g., “on time”) and once in a low-frequency collocation. The high-proficiency learners in his study showed a significant tendency to be more accurate on the former than the latter, an indication that even advanced learners often fail to master the fine-grained semantic distinctions that motivate preposition choice. Lessons like the CL-based CALL instruction examined in this study may therefore be a useful addition to college EFL courses as the lesson is designed to teach the precise semantic cues that determine prepositional choice.

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