Academic Vocabulary Guide: Spacing Interaction with Words

One vocabulary study strategy that may boost retention and recall is to space (distribute) practice sessions over time. Research findings on this strategy are mixed, although employing the spacing effect by revisiting your study-words at expanded intervals is generally considered effective compared to massed practice.[1] That is, you can remember words longer if you leave gaps between your study sessions instead of massing all your practice at once.[2] In fact, when you are studying words out of context (e.g., a word list) using longer rather than shorter intervals between interactions with your words tends to yield better retention.[3]

What is Spacing Interaction?

Spacing Interaction means rather than massing all your study time with no gaps between sessions, you should distribute study over time. The length of time between study sessions and the gap between study and the final test affect how well you can retain and recall words.[4] For example, the longer the interval between study sessions, the better your long-term retention will be, but if you only need to remember words for a short time, shorter gaps between study sessions give better results.[5]
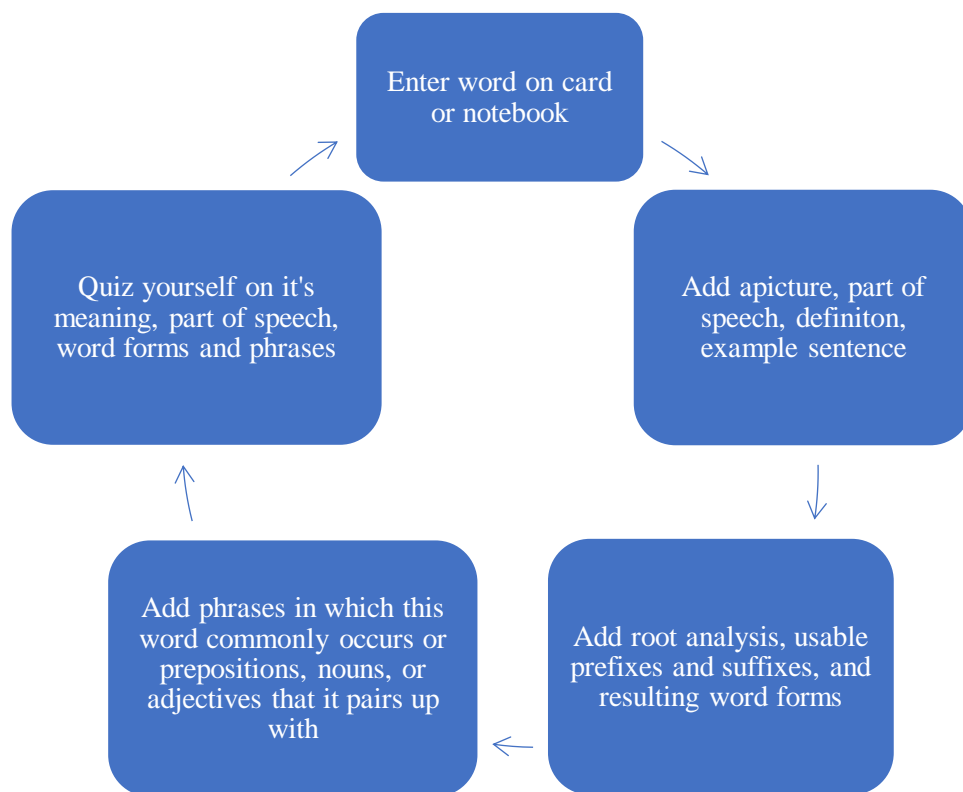
How to Space Your Practice

Determine how long you need to remember the words you are studying so that you can schedule your practice at the most advantageous intervals

Generally, the longer the gap between study sessions, the better and longer you will retain the words.[6] When setting up a study schedule, the length of gaps should be dependent on when you need to recall the information. For example, some studies found that tests in seven days produced better results with 1-day gaps; tests in 35 days required 11-day gaps between study sessions for optimal results, and for a test in 70 days, studying with a 21-day gap was more profitable.[7]

> Rule of thumb: The *first* time you quiz yourself after initial study should be 10-20% of the time you want to retain the words.[8] Subsequent study/quizzing sessions should be progressively further apart.[9]

Interact with words in a variety of ways

At each successive session, choose from a variety of information to add to your word knowledge. Begin with basic information and at later sessions elaborate at greater depth so that your resulting knowledge of the word is deep and sophisticated.[10] Since recall produces better retention than just recognizing a word, you should quiz yourself in some form at each study session.[11]

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        ┌─────────────────────┐
        │   Enter word on card │
        │     or notebook      │
        └─────────────────────┘
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Enter word on card or notebook

Quiz yourself on it's meaning, part of speech, word forms and phrases

Add apicture, part of speech, definiton, example sentence

Add phrases in which this word commonly occurs or prepositions, nouns, or adjectives that it pairs up with

Add root analysis, usable prefixes and suffixes, and resulting word forms

> In the figure, the boxes suggest a variety of ways in which you might interact with words that are hard to remember. The arrows between boxes remind you to space your interactions with each word over time.

Detailed Example

To help you visualize the complete process of spaced interaction when applied to learning vocabulary, study the following detailed example. In this example, you can see how to space for a test in ten days and for a cumulative final test in 90 days.[12]

Select Study Words

Study Session One

Enter basic information about words: definition, translation, and pronunciation using our Word Card resource. Write the definition *in your own words* rather than copy from the dictionary. If it is a word new to you, repeat pronunciation at least three times.

Calculate Retention Time

How long do you need to retain or remember the words you are studying? Set up a study schedule based on the above rule of thumb. *Example***: If you have a test in 10 days**, study on Day 1, wait 1-2 days and quiz yourself as you re-study, then wait successively longer periods between study as the test day approaches. **If you need to retain and recall words for a cumulative final test in 90 days**, or even beyond, study your word set on Day 1, wait 9 to 18 days before quizzing yourself again, and then make successively longer delays between study sessions until the final test.

Study Session Two

Interact with your words in a variety of ways: Add different types of information beginning with basic information and at later sessions elaborate at greater depth so that your resulting knowledge of the word is deep and sophisticated. Quiz

yourself in a variety of ways. For example, quiz spelling and pronunciation by entering the words you are studying into the Vocabulary Spelling City app, which will generate a spelling test and call the words out for you to spell.

Study Session Three

Elaborate word information and quiz yourself. Add more information for each study-word such as synonyms, antonyms, an audio link for pronunciation, a word web (create your own web or copy from an app such as WordSift). What is its noun, verb, adjective or adverb form? Quiz with AWL Highlighter and Gapfill to generate sentences that require different forms of the word. check your guesses using your grammar knowledge and a learners' dictionary.

Study Session Four

Add more types of word information: Add an alternative definition if the word has different definitions in various discipline or contexts. Add some fill in the blank quiz questions.

Study Session Five

Add more sophisticated word information: Add collocations for the word. You can look up collocations using the Word and Phrase Info or Oxford Learner's Dictionary's OPAL. Which prepositions, nouns, verbs, or adjectives commonly pair up with this word? In what phrases does your word typically occur? try the Browse or KWIK function on the COCA database to find this information. Add register (level of formality or informality). The Chart function on COCA would let you see the academic versus informal register of a word.

> Continue to add study sessions at appropriate intervals as needed to meet your word-retention goals.

Why This Strategy Works

According to research in brain-based learning strategies, educational psychology, and language-learning, using multiple strategies at spaced intervals will make the words easier to recall and use since each interaction will reinforce brain traces employed in retrieval. No matter which strategies you choose to combine, always apply the general principles of vocabulary learning.

Summary

Our Academic Vocabulary Guide resource series was developed as a way to provide English as an Additional Language (EAL) learners the opportunity to better learn and retain academic vocabulary. For readers interested in more information about academic vocabulary development, please view our Academic Vocabulary Guide resource.

We hope this guide will provide you with strategies for more productive academic vocabulary development. If you have questions, please contact elc@vanderbilt.edu.

Find this guide and more online at: https://www.vanderbilt.edu/elc/resources/academic-vocabulary-guide/

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[1] Cepeda, N. J., Pashler, H., Vul, E., Wixted, J. T., & Rohrer, D. (2006). Distributed practice in verbal recall tasks: A review and quantitative synthesis. Psychological bulletin, 132(3), 354; Carpenter, S. K., Cepeda, N. J., Rohrer, D., Kang, S. H., & Pashler, H. (2012). Using spacing to enhance diverse forms of learning: Review of recent research and implications for instruction. Educational Psychology Review, 24(3), 369-378; Rogers, J., & Cheung, A. (2020 (a)). Does it matter when you review?: Input spacing, ecological validity, and the learning of L2 vocabulary. Studies in Second Language Acquisition, 1-19. Rogers, J., & Cheung, A. (2020 (b)). Input spacing and the learning of L2 vocabulary in a classroom context. Language Teaching Research, 24(5), 616-641; Alfotais, A. (2019). Investigating the effect of spaced versus massed practice on vocabulary retention in the EFL classroom (Doctoral dissertation, University of Essex); Suzuki, Y., & Sunada, M. (2020). Dynamic interplay between practice type and practice schedule in a second language: The potential and limits of skill transfer and practice schedule. Studies in Second Language Acquisition, 42(1), 169-197.
[2] Rohrer, D., & Pashler, H. (2010). Recent research on human learning challenges conventional instructional strategies. Educational Researcher, 39(5), 406-412. Bahrick, H. P., & Hall, L. K. (2005). The importance of retrieval failures to long-term retention: A

metacognitive explanation of the spacing effect. Journal of Memory and Language, 52(4), 566-577; Rohrer, D. (2015). Student instruction should be distributed over long time periods. Educational Psychology Review, 27(4), 635-643.

[3] Nakata, T (2008). English vocabulary learning with word lists, word cards and computers: Implications from cognitive psychology research for optimal spaced learning. ReCALL, 20(1), 3; Nakata, T. (2015). Effects of expanding and equal spacing on second language vocabulary learning: Does gradually increasing spacing increase vocabulary learning? https://www.jstor.org/stable/10.2307/26330638. Nakata, T., & Elgort, I. (2021). Effects of spacing on contextual vocabulary learning: Spacing facilitates the acquisition of explicit, but not tacit, vocabulary knowledge. Second Language Research, 37(2), 233-260.

[4] Guo, Lin (2018): Effects of the initial test interval and feedback timing on L2 vocabulary retention, The Language Learning Journal, DOI: 10.1080/09571736.2018.1551416.

[5] Rohrer, D., & Pashler, H. (2010). Recent research on human learning challenges conventional instructional strategies. Educational Researcher, 39(5), 406-412. pdf; Bahrick, H. P., & Hall, L. K. (2005). The importance of retrieval failures to long-term retention: A metacognitive explanation of the spacing effect. Journal of Memory and Language, 52(4), 566-577; Carpenter, S. K., Cepeda, N. J., Rohrer, D., Kang, S. H., & Pashler, H. (2012). Using spacing to enhance diverse forms of learning: Review of recent research and implications for instruction. Educational Psychology Review, 24(3), 369-378.

[6] Rohrer, D. (2015). Student instruction should be distributed over long time periods. *Educational Psychology Review*, 27(4), 635-643; Rohrer, D., & Pashler, H. (2010). Recent research on human learning challenges conventional instructional strategies. *Educational Researcher*, 39(5), 406-412.)

[7] Carpenter, S. K., Cepeda, N. J., Rohrer, D., Kang, S. H., & Pashler, H. (2012). Using spacing to enhance diverse forms of learning: Review of recent research and implications for instruction. *Educational Psychology Review*, 24(3), 369-378.

[8] Guo, Lin (2018): Effects of the initial test interval and feedback timing on L2 vocabulary retention, The Language Learning Journal, DOI: 10.1080/09571736.2018.1551416.

[9] Rohrer, D. (2015). Student instruction should be distributed over long time periods. *Educational Psychology Review*, 27(4), 635-643.

[10] Carpenter, S. K., Cepeda, N. J., Rohrer, D., Kang, S. H., & Pashler, H. (2012). Using spacing to enhance diverse forms of learning: Review of recent research and implications for instruction. Educational Psychology Review, 24(3), 369-378; Guo, Lin (2018): Effects of the initial test interval and feedback timing on L2 vocabulary retention, The Language Learning Journal, DOI: 10.1080/09571736.2018.1551416.

[11] Nakata, T. (2008). English vocabulary learning with word lists, word cards and computers: Implications from cognitive psychology research for optimal spaced learning. *ReCALL: the Journal of EUROCALL*, 20(1), 3.

[12] Carpenter, S. K., Cepeda, N. J., Rohrer, D., Kang, S. H., & Pashler, H. (2012). Using spacing to enhance diverse forms of learning: Review of recent research and implications for instruction. Educational Psychology Review, 24(3), 369-378; Guo, Lin (2018): Effects of the initial test interval and feedback timing on L2 vocabulary retention, The Language Learning Journal, DOI: 10.1080/09571736.2018.1551416.