



## Explanation

Research tells us that interleaving, the practice of reviewing previous and new concepts or skills concurrently is more beneficial than blocking. With blocked practice, you focus on one concept at a time before moving on to the next concept. For example, you would review Topic

1 in its entirety before moving on to Topic 2, and you would follow this same blocked pattern for Topics 3 and 4. This differs from interleaved practice where you would introduce Topic 4 while simultaneously reviewing Topics 1, 2 and 3. (Image: <https://blog.innerdrive.co.uk/blocking-or-interleaving-for-revision>)

One must note that interleaving is not a one-time occurrence. That is to say, ideally interleaving should happen as spaced review. Throughout each course/semester and across courses/semesters, we should **“build in activities and assignments that have students review and practice retrieving content at spaced intervals,”** (Nilson & Goodson, 2018, p. 91) preferably every few weeks. Since interleaving involves retrieval and practice with previous content, students generally find interleaved practice to be somewhat challenging, especially if it is happening across different courses. However, research indicates that such a challenge results in students’ long-term retention of the material.

In fact, “Cognitive psychologists believe that interleaving [as opposed to blocking] improves the brain’s ability to differentiate, or discriminate, between concepts and strengthens memory associations.” (The University of Arizona Academic Affairs, 2019). Research has shown that interleaved practice improves long-term retention, problem solving, and the ability to transfer learned



To hear professors discuss their research and the benefits of interleaved practice across various disciplines, watch some of the following videos:

- [How to study to maximize performance](#) by Drs. Elizabeth Bjork & Robert Bjork (University of California, Los Angeles)
- [The benefits of interleaving practice](#) by Dr. Robert Bjork (University of California, Los Angeles)
- [Benefits of Interleaved Practice](#) by Dr. Noa Kageyama (The Juilliard School)
- [The Benefits of Interleaved Practice](#) by Dr. Doug Rohrer (University of South Florida)

To review some additional information and research on interleaved practice before completing some practice activities, look over some of the resources listed below. Additional research, including discipline-specific research for foreign languages, STEM and music, can be found in the references section located at the end of this guide.

- Firth, J., Rivers, I., & Boyle, J. (2021). A systematic review of interleaving as a concept learning strategy. *Review of Education*, 9(2), 642–684.
- Pan, S. C. (2015, August 4). *The Interleaving Effect: Mixing it up boosts learning*. <https://www.scientificamerican.com/article/the-interleaving-effect-mixing-it-up-boosts-learning/>
- Rohrer, D., & Pashler, H. (2010). Recent research on human learning challenges conventional instructional strategies. *Educational Researcher*, 39(5), 406-412. <https://doi.org/10.3102/0013189X10374770>
- University of Arizona Academic Affairs. (2019, July 25). *L2L strategy - Interleaving*. <https://academicaffairs.arizona.edu/l2l-strategy-interleaving>.

If you have any questions or wish to discuss interleaved practice in more depth, please contact your [R.I.S.E. scholar](#) or the Learning Academy.

## Let's practice!

### *Interleaved practice within a single course*

Interleaved practice is a great way to enhance rigor in any course. Before implementing this strategy in your courses, it is a good idea to identify the following: 1) the new skills and content that you want students to learn, and 2) the previous skills and content that you want students to retrieve and review. Use this information to develop an activity that helps students make connections between and practice with the new content and the previous content concurrently.



For example, you could have a discussion or essay prompt that encourages students to make connections between new and old material. You could also give students a role-play scenario



3.



## References and More Resources on Interleaved Practice:

Butler, A., Marsh, E., Slavinsky, J., & Baraniuk, R. (2014). Integrating cognitive science and technology improves learning in a STEM classroom. *Educational Psychology Review*, 26, 331–340. <https://doi.org/10.1007/s10648-014-9256-4>

Dunlosky J., Rawson K., Marsh E., Nathan M., & Willingham, D. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest*, 14(1), 4-58. <https://doi.org/10.1177/1529100612453266>

Nakata, T., & Suzuki, Y. (2019). Mixing grammar exercises facilitates long-term retention: Effects of blocking, interleaving, and increasing practice. *Modern Language Journal*, 103(3), 629–647.

Nilson, L. (2016). *Teaching at its best: A research-based resource for college instructors*. (3<sup>rd</sup> ed). Jossey-Bass.

Nilson, L., & Goodson, L. (2018). *Online teaching at its best: Merging instructional design with teaching and learning*. Jossey-Bass. ossn Lateno.9gua J pTf-0.erle 7 (t)-3 (i)1ju3 ( )TJ/tcndt: Me76 499.68 [(J (e

