By Cindy Nebel cover image from Pixabay by padrinan Interleaving is the idea that, while learning, we will learn more if we jumble up our review of similar materials, rather than reviewing one concept at a time in a blocked format. Interleaving has been shown to be effective in the laboratory (1) as well as the classroom (2) and for different types of materials (3). One thing that we’ve heard from educators is that they worry interleaving can be too challenging for students and that students need some blocking first. Cue this week’s research review blog post: Veronica Yan and Faria Sana looked at just this issue (4). Is it possible that blocking is better than interleaving when the material is more challenging? Would some students need blocking before interleaving? Image from Pixabay by geralt There’s a reason to think they might. For example, in one study, when learners were learning different tennis strokes, blocking was actually a bit better than interleaving for lower-skilled students (5). But what does “lower-skilled” equate to when we’re not talking about tennis? Would we find these same effects across classrooms? In the present study, the researchers looked at these questions in a number of ways. They had three main variables they were interested in: Student skill, which they defined as working memory capacity (or, more simply, how much can a student hold in mind at a time) Task difficulty Interleaving vs. blocking Image from Pixabay by flutie8211 They tried this with different types of materials in their first few experiments. Participants learned to distinguish different painters in Experiment 1 and different types of fish in Experiment 2. Overall, what they found is that interleaving was superior to blocking all the time (with the small exception when things were too hard or too easy - then it didn’t matter if you blocked or interleaved). This means that students with lower skill, getting difficulty problems, were still better off interleaving than they were blocking. There’s one more very important part of this set of experiments. They also asked students after they had already been tested which condition would be most effective and about 80% of students said that blocking was better for learning. This is crazy. They’ve already done the task and they still don’t realize what was good for them! The researchers also asked whether any of the participants themselves showed a benefit from blocking. So that is, even if we average the class and find that interleaving is better, what if for Sally and Joe, blocking was actually a big better but because they are in the minority, we don’t notice when we look at the class as a whole? Well, it turns out that there were some participants who did a little better with blocking sometimes, but not consistently. Across all the different materials, conditions, and learners in this study, interleaving was almost always found to be superior to blocking and blocking was never better than interleaving. Interleaving is really effective.