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Roundup on Research: The myth of “learning styles”

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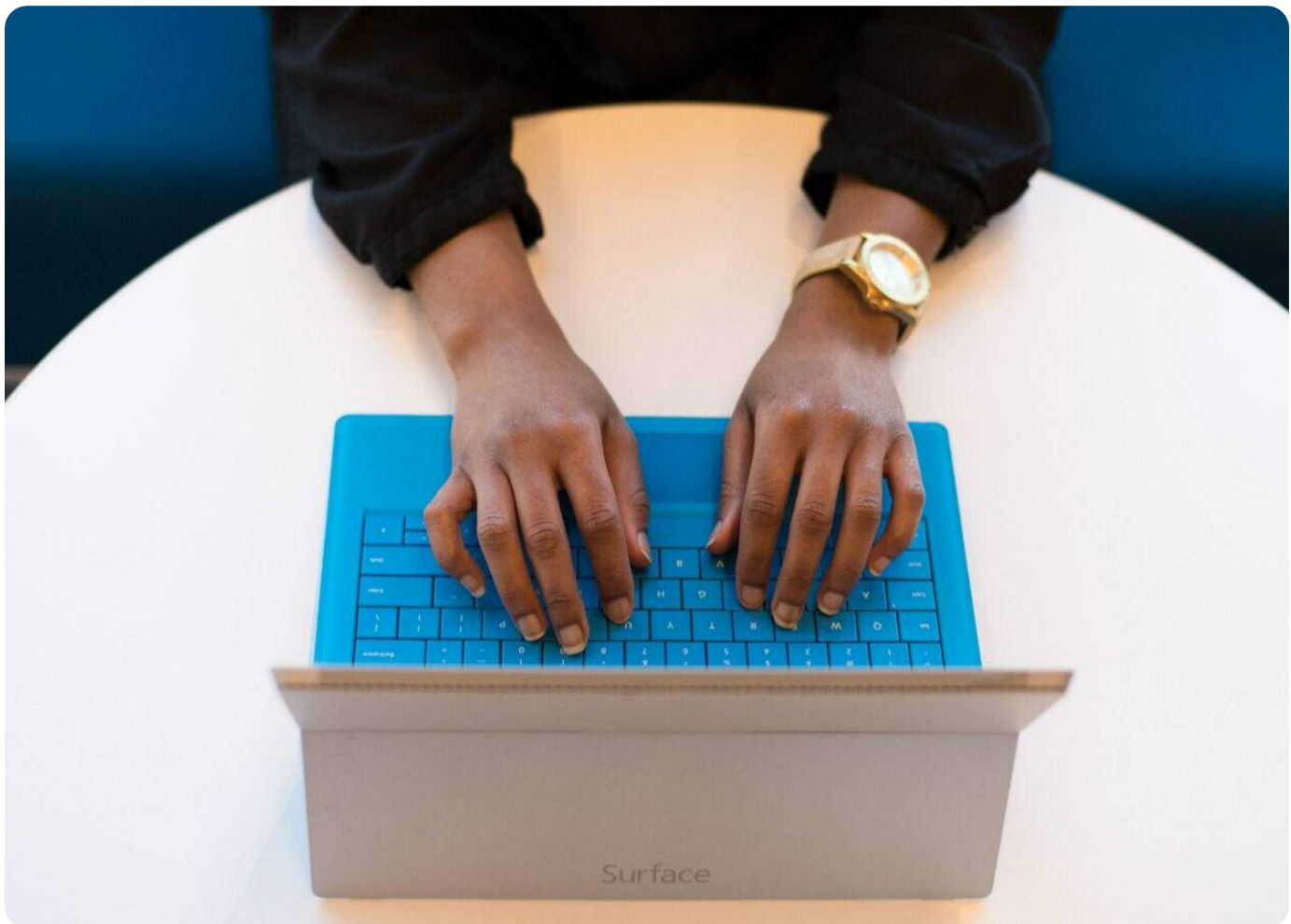
Last Updated: March 5, 2024

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Introduction

If you have been anywhere where teaching is involved, you have probably heard mention of “learning styles.” “I’m a visual learner” vs. “I’m a hands-on learner” or “My instructor didn’t teach in my learning style” are all the types of commentary that are common when some individuals talk about their own learning. Although it is deeply appealing to be able to categorize individuals into easy methods of learning, unfortunately, it is deeply flawed, has little empirical evidence to support it, and might cause more problems than it solves.

What are learning styles?

To best understand why learning styles are problematic, it is important to clearly define learning styles. The idea of learning styles is that there are stable, consistent methods that individuals take in, organize, process, and remember information, and by teaching those methods, students learn better.

One popular concept in learning styles posits that the modality of information is critical – a “visual” learner learns best by seeing versus an “auditory” learner who learns best by having things spoken or described to them. Learning style theory would suggest that by using visual aids, a visual learner would organize and retain information better than say, an auditory learner. The implication is that matching modality information to the modality of learning style is critical to student success.

A note: there are additional and related concepts of “cognitive styles,” “learning strategies,” and “learner preferences” that can sometimes be used interchangeably with “learning styles.” For this

article, “learning styles” refers specifically to the theory that there are ways that individuals learn best. In contrast, learning preferences suggest that there are ways people prefer to receive information, but it may not impact learning.

At face value, the concept of learning styles makes sense. Individuals learn differently. Most educational settings are trying to reach large numbers of students in personalized ways. It would be useful to have an easily applied theory that would help all students learn! As educators, we want to recognize the “uniqueness” of each student and help learners in any way we can. This desire has led educators to look for easier ways to navigate the complexities of teaching. Unfortunately, learning is not that simple.

Do learning styles really exist?

In general, most learning style theories make two presumptions:

1. Individuals have a measurable and consistent “style” of learning, and
2. Teaching to that style of learning will lead to better education outcomes, and conversely, teaching in a contradictory method would decrease achievement.

In other words, if you are a visual learner, you should learn best if you see things, regardless of the situation. If you are a kinesthetic learner, you will learn best if you can physically manipulate something, regardless of the topic. However, neither of these two assumptions shows any grounding in research. These two propositions are where we can see the concept of learning styles breaking down.

Are learning styles measurable and consistent?

Did you know that there are actually over 50 different theories of learning styles by various researchers? Researchers have been trying for years to find a correlation between individuals and how to help learning. Some theories suggest the modality of learning matters (like the common VARK theory) while others propose details like time of day and temperature of the room define a learning style. One study that suggested using a cell phone was a learning style (Pursell, 2009). Just the number of different styles makes it difficult to measure and make sense of an individual style.

In addition, most learning style inventories rely on a student’s self-report about how they perceive they learn best. These self-reports are generally not validated in any way. Generally, humans tend to be poor judges of our own learning. Therefore, these surveys are generally measuring “learner preference” rather than “learning style.” You may think you are an auditory learner but until it is validated that you objectively learn better through audio format, it is a preference, not a style.

Also, when reporting results, many studies will rely on “student satisfaction” as a measure of success, or rely on students’ reflections as a measure of success in a class. For example, many measures of learning styles will ask students how they believe they learn best. Unfortunately, satisfaction with a class or a student’s recollections of success are subjective measures, and generally not accurate (Kirschner & van Merriënboer, 2013, Kirschner, 2017). While understanding a learner’s preference is useful as is understanding student satisfaction with a lesson, it does not have the same weight as necessitating teaching to that preference.

Finally, “styles” are unstable and unreliable. The research on learning styles has suggested that these preferences may be unstable – they be topic-specific, but they also change over time (Coffield et al., 2004). That means that although an individual may be a kinesthetic learner in history this week, that person is a visual learner in math when talking about

calculus (but not about geometry), or prefers to learn how to ride a bike kinesthetically instead of reading about it in a book. This questions whether a learning style is a “trait” (or something stable and persisting for a person) or a “state” (something that is temporary and may change). Learning styles as a state of mind are not particularly useful. How can a teacher know the preference of an individual student today in a given subject?

Does teaching a learning style result in better learning?

Even more importantly, however, is the second assumption – does teaching to an individual’s learning style lead to achievement? Simply put, there is no evidence that supports teaching to a person’s specified learning style results in better learning (Alley, et. al., 2023; Cuevas, 2015; Kirschner & van Merriënboer, 2013; Krätzig & Arbuthnott, 2006; Pashler et al., 2008; Rogowsky et al., 2020). No study has shown that teaching to an identified learning style results in better retention, better learning outcomes or student success. Instead, we see that teaching to a self-identified learning style has no impact on learning in children or adults (Krätzig & Arbuthnott, 2006; Paschler et al., 2008; Rogowsky et al., 2015, Rogowsky et al., 2020). Some research suggests that some students performed better on tasks when taught in a different modality than their self-identified “learning style” (Krätzig & Arbuthnott, 2006, Rogowsky et al., 2020). Most studies of learning styles use a methodology that uses multiple styles to all learners – meaning that there is no way to isolate learning style to teaching method. This leads us to ultimately conclude that while the concept of learning styles is appealing, at this point, it is still a myth.

Alternate explanations to learning styles

Anecdotally, there are many stories about the success of leveraging

“learning styles.” If learning styles are not empirically supported, how are these successes explained? There are alternative explanations for why teaching in multiple methods increases achievement that do not prescribe students into style categories. Multi-modal learning explains how learning improves with various methods of teaching.

Learning requires sustained attention. Therefore, if an educator can capture and maintain students’ attention, students’ learning outcomes likely improve. Providing engagement with content in multiple forms – be it through hands-on activities, or different modalities – makes students pay attention to content in different ways, and requires learners to integrate knowledge in new ways. If an educator is using multiple methods and modalities, it’s just more interesting, and students pay more attention, which leads to better learning. Mayer and colleagues (2001, 2003) have extensively studied how students learn with visuals and audio, and the interaction of the two. What he and his colleagues suggest is that by providing dual streams of information in multiple methods engages learners to work harder at understanding the material, which leads to better learning. It may be that the research on learning styles is actually showing that teaching with different modalities is just more interesting to students rather than catering to a particular style of learning (Krätzig & Arbuthnott, 2006).

Why learning styles are dangerous

While the intentions of learning styles are good, the implications of learning styles are more destructive than helpful. On the positive side, reflecting on how one learns is always a lesson. However, by focusing on a style suggests that learners are passive vessels at the whim of the method of teaching. Ultimately, most educators want students to actively engage in their learning. The best learning takes place when an individual can connect and incorporate information into his or her personal experiences and understanding. By focusing on a student’s learning style we reinforce

a simplistic view of learning. Learning styles suggest that individuals have one way to learn best. Unfortunately, learning is complex, and not easy. This is hard and takes time! It has very little to do with the way information is handed to a learner, but rather, how the learner processes that knowledge once they have it. It is important to remember – learning is within the control of the learner.

Thinking critically about learning styles

If learning styles do not impact an individual’s ability to learn, why is there so much talk about them? Articles and books are still being published about learning styles and how to tailor teaching to reach every style. Research on teaching and learning is a complicated discipline, and being able to examine theories and concepts like learning styles critically is important to anyone working in education. The challenge is to keep a skeptical eye when you hear about research supporting learning styles and ask the right questions to make sure you are getting good information.

What should you think about the next time you encounter learning styles in the wild?

1. What framework of learning styles are they referring to? Some are more empirically vetted than others. The most popular learning style VARK (Visual–Auditory–Read/Write–Kinesthetic) is also the least validated. Find out more about the learning style being discussed.
2. How are they measuring both learning style and success? Are they self-reported? Are they looking at academic results or a self-report of satisfaction with learning?
3. Is the study carefully controlled? Many studies fail to tailor the learning to a particular style. Rather, the lesson uses all the styles to reach all the students. There is no way to truly measure success.
4. Learning styles can be controversial with some people. They aren’t

necessarily harmful if they encourage people to reflect on teaching and learning in different ways. They can be harmful if students believe that their learning is outside their control.

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