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THE STUBBORN MYTH OF “LEARNING STYLES”

State teacher-license prep materials peddle a debunked theory

REASONABLE PEOPLE MAY DISAGREE about whether teachers should have to pass licensing tests of instructional knowledge before getting a job in a classroom. But it’s hard to dispute the idea that, if there is going to be such a test, then the questions should be based on the best evidence we have about how children learn. Right?

Actually, my research shows that in 29 states, government-distributed test-preparation materials on high-stakes certification exams include the debunked theory of “learning styles,” which holds that matching instruction to students’ preferred mode of learning—seeing, listening, or physically engaging in content-aligned activities, for example—is beneficial. My work builds on earlier research showing the prevalence of the idea in textbooks and teacher trainings across the United States. The presence of such content promotes an incorrect theory.

There is no evidence that designing lessons that appeal to different learning styles accelerates student learning. Yet teacher candidates are consistently directed to keep these pseudoscientific style categories in mind. The idea of “learning styles” is persistent and popular in the field, in part because many teachers don’t know the science that disproves it. Education and teacher preparation are better when they are informed by empirical evidence than when they operate in disregard of it. It is important to ensure that educators are prepared with accurate insights into learning, instead of with myths.

No Proof for Learning Styles Boost

Has anyone ever told you “I’m a visual learner?” It’s a common statement, based on a belief in learning styles. The most frequently referenced styles are visual, auditory, and kinesthetic, which assume that some individuals learn best by looking at pictures, others learn best by listening, and still others learn best through hands-on activities. The assumption that students have distinct learning styles and learn best through these channels has influenced teacher practice for decades—despite a lack of

evidence that such styles even exist (see “Unlocking the Science of How Kids Think,” *features*, Summer 2018).

Like many misconceptions about learning and the brain, the belief in learning styles stems from an incorrect interpretation of valid research findings and scientifically established facts. For example, it is true that different types of information are processed in different parts of the brain. It is also true that individuals have differences in abilities and preferences. Since the 1970s, however, systematic research reviews and meta-analyses examining the validity of learning styles and their application to education have come to the same conclusion: despite the intuitive appeal, there is little to no empirical evidence that learning styles are real. The fields of cognitive psychology and neuroscience consider them a “neuromyth” and disavow the practice of matching instruction to individuals’ preferred learning styles to promote learning. In these fields, believing in learning styles has been compared to believing in fortunetelling.

Then there’s the education community, where students’ learning styles remains a popular idea and pedagogical priority. Research scientists continue to examine the theory in response to the thriving industry marketing learning-styles assessments and interventions to educators, despite the dearth of evidence suggesting an impact. Year after year, the proof eludes us—even with the cheeky promise of a \$5,000 cash prize for anyone who can demonstrate a positive effect of incorporating learning styles into an educational intervention. As cognitive psychologists Doug Rohrer and Hal Pashler wrote in their 2012 research review, “it does indeed make sense to speak of students who, in comparison with their peers, have poor visual-spatial ability and strong verbal ability, but this does not imply that such students will learn anatomy better if their textbook has few diagrams.”

Nonetheless, starting with their training, teachers are steeped in the lore of learning styles. A 2016 study by the National Center on Teacher Quality found that 67 percent of teacher-preparation

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programs required students to incorporate learning styles into lesson-planning assignments, and 59 percent of textbooks advised taking students' learning styles into account. Those lessons appear to stick: a 2017 study examining the prevalence of neuromyths found that, of the 598 educators surveyed, 76 percent agreed that "individuals learn better when they receive information in their preferred learning style," and 71 percent agreed that "children have learning styles that are dominated by particular senses."

Even when teachers do encounter sound science, those messages are blurred by the importance assigned to learning styles in coursework and licensure exams. As Joshua Cuevas found, when teachers study educational psychology, those textbooks—unlike general education materials—approach the topic with skepticism, pointing out the lack of evidence and cautioning against the use of unsupported instructional practices. But textbooks also align their content with standard licensure exams, leading to incongruent mentions of learning styles. For example, a passage in the margins of the widely used *Educational Psychology: Theory and Practice* textbook written by Robert E. Slavin and published by Pearson reads: "Teacher certification tests may ask you to design a lesson that would accommodate students' various learning styles." Yet in 2019, an issue of Slavin's newsletter published by the Center for Research and Reform in Education at Johns Hopkins University stated: "There is no practical utility in knowing students' learning styles."

What are teachers to believe? It should come as no surprise that most think learning styles are important. In more than half of U.S. states, teachers are required to study up on learning-styles theory as they prepare for high-stakes licensure exams.

The Link to Licensure

To reveal the extent of this problem, I, with the help of undergraduate students studying to become certified teachers, first reviewed the requirements for licensure and certification to work as an elementary-school teacher in all 50 states and the District of Columbia. We then focused our analysis on only those states that require aspiring teachers to pass computer-based standardized exams that test knowledge of instructional methods. That limited our sample to 34 states and the District of Columbia. We did not include the 16 states that only require tests that are performance-based or measure content knowledge, as those tests likely would not include learning styles since they do not directly test pedagogical knowledge.

We then reviewed free, publicly available test-preparation materials to find mentions of "learning styles" and determine whether or not the information advocated for modifying lessons based on that theory. In all, 29 states and the District of

Columbia currently require licensing exams for elementary certification that have official study materials that reference learning styles (see Figure 1).

Nearly all of those materials advocate for modifying instruction to accommodate learning styles. Only one state, Massachusetts, has study materials that refer to learning styles but do not clearly advocate for their relevance or application in the classroom. In this case, the term "learning styles" is used in an example of a weak response to a composition exercise.

Because several states partner with major testing companies to administer the exams, there is quite a bit of overlap in licensure test requirements. For example, 21 states and the District of Columbia require one or more tests of instructional knowledge from Educational Testing Service's Praxis Series, which study materials say may ask questions pertaining to learning styles. In addition, nine states require state-specific examinations testing instructional knowledge, seven of which have preparation materials available for free that advocate for accommodating learning styles during instruction.

The publicly available preparation materials place varying degrees of emphasis on learning styles. Several list learning styles alongside prerequisite knowledge, skill levels, and interests as suggestions as to how one might differentiate and individualize instruction. Others provide specific questions regarding visual, auditory, and kinesthetic learning and the instructional methods that might best match students with different learning styles.

For example, study companions for the various Praxis licensure tests ask aspiring teachers to "describe some activities that might help students with varying learning styles best learn key concepts" and to "give a specific example from your own classroom

experience of the effects of differences in learning styles on how people understand and express what they know." In Oklahoma, the study guide for the state's Professional Teaching Examination goes so far as to provide results from a "learning-styles inventory" that the test taker is expected to analyze, interpret, and cite within a constructed response.

Misplaced Priorities

So what should be done when supposedly "correct" answers on teacher-licensure tests are actually wrong? Sound professional judgment requires that the best available knowledge gained through empirical research be integrated into practice. Teachers are professionals whose influence on human lives cannot be overstated. It's critical that they make instructional decisions informed by evidence. To promote such practice, several changes will be needed.

First, teacher-preparation programs could function more



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not want our future teachers to accept blindly what publishing companies market to them to inform instructional decisions any more than we want doctors to blindly accept what pharmaceutical representatives market to them to inform treatment decisions.

Failing to take these steps may have steep costs to the teaching profession and to kids across the country. Consider a similar mismatch between research and practice: reading instruction at U.S. schools. Because the vast majority of teachers did not learn the science of reading in their preparation programs, they rely on common practices and word of mouth to teach reading once they reach the classroom. As a result, “whole language”-style instruction masquerading under the name “balanced literacy” remains popular, despite ample research pointing the way toward a more systematic, effective method of instruction. Meanwhile, one in three American 4th graders cannot read at a basic level.

It seems reasonable to ask how learning styles theory could harm students. Would-be teachers need to recognize and respect individual differences and understand the importance of differentiated instruction, right? Doesn’t incorporating learning-styles theory into instruction align with these core principles?

It seems harmless enough, but when teachers work to accommodate learning styles, which have no empirical support, they divert attention and effort away from instructional strategies that are supported by a substantial body of research. There are principles of instruction and strategies for effective learning that are supported by converging empirical evidence from multiple fields—practical knowledge teachers ought to have upon entering their first classroom. When training programs spend time discussing learning styles, that’s time not spent discussing proven practices to enhance student learning. For example, the National Council on Teacher Quality’s textbook study found 59 percent of textbooks did not even mention the six highest-impact teaching methods identified by the Institute for Education Statistics more than a decade ago, and just 15 percent spent a full page on those practices. Even then, it was only two books, and they discussed just two of the six strategies. Meanwhile, more than half of textbooks included details about learning styles. Rather than learning to assess, group, and plan instruction for visual, auditory, and kinesthetic learners, teachers can learn to assess and differentiate instruction based on individuals’ level of mastery with prerequisite skills and knowledge—important factors that do influence student learning.

In addition to the misallocation of teachers’ time and effort, there are other potentially detrimental effects of learning-styles-based instruction, detailed memorably by Daniel Willingham. Students may act on their label. If a student believes she or he has a particular dominant learning style, the student may avoid

effective learning strategies or even entire subjects they believe are a better fit for a learning style they don’t think suits them. Moreover, since individuals are able to control the type of mental processing they use, students who are taught they have a dominant learning style may attempt to process information in their preferred style, even when the method does not fit the task. And teachers who attempt to accommodate multiple learning styles in a lesson, rather than focusing on the most effective methods to present the specific material, can negatively influence student learning by causing cognitive overload.

Coursework Corrections

Teacher educators and preparation-program administrators should not want to propagate a myth that has negative effects on student achievement and motivation. However, if they want to keep certification rates high and see students’ dreams of having their own classrooms come to fruition, they’ll need to prepare candidates fully for licensure exams. So, until the content of

licensure exams more accurately reflects evidence-informed practice and principles from learning science, teacher educators are left with a less-than-ideal strategy to minimize the damage.

While emphasizing evidence-informed instruction through a careful selection of journal articles and textbooks, teacher educators can teach candidates that accommodating student learning styles is not supported by research. However, for the purposes of licensure exams, they can tell their aspiring teachers to disregard empirical findings so that they can get the “correct” answer. This appears to be the route already taken by some educational-psychology textbooks, which can leave students questioning the overall legitimacy of the licensure exams.

Indeed, reviewing the content of those exams appears pressing. Instead of testing students on material with no empirical backing, state departments of education could provide a useful service by scouring the required licensing exams that test knowledge of instructional methods and removing content without a sufficient evidence base. Learning-styles theory is not the only content fitting this description—Praxis tests also include Maslow’s hierarchy of needs, for example, which is not supported by empirical evidence.

Both test developers and teacher educators have a responsibility to stay up-to-date on research regarding learning and instruction. What they choose to include in course syllabi and on licensure tests is more than a statement about what the field of education believes future teachers ought to learn. It is also a statement about how much the field values empirical knowledge.

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